

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 3

8. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1300 A 0 B 1105 DL

supersedes 12.83

Komb.-Nr. 0 400 876 260

company Daimler-Benz

engine OM 352 A

92 kW (125 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1300	10,0+0,1	6,7-6,8	0,3(0,45)			
350	6,9-7,1	0,8-1,2	0,2(0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	lose	350	7,0	1300	10,0-10,1
	x = 5,0								500	10,4-10,6
ca. 65	9,0	1340-1350					100	min.19,0	750	10,4-10,5
2a	4,0	1420-1450					350	6,9-7,1	1140	10,0-10,1
	1540	0,3-1,7					490-550	= 2,0		
							700	max.1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40 °C (104 °F)		Note changed to 1				Idle			
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1300	67,0-68,0 (65,0-70,0)	1340-1350*		750	59,0-61,0 (56,5-63,5)	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

BOSCH

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 x 8

2. Edition

En

PES 6 A 90 D 410 RS 2293

RQV 300-1400 AB 1142 L

Komb.-Nr. 0 400 846 477

supersedes 5.74

company Daimler-Benz

engine OM 352 A

124,0 kW (169 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
(2,10,2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1375	11,3+0,1	7,5-7,6	0,3(0,45)			
300	7,6-7,8	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	16,0-19,4	-	-	-	ca. 15	100 300	min. 9,2 7,6-7,8	250 600 950 1400	0,9-1,1 3,1-3,4 5,3-5,5 8,2
ca. 61	10,3 4,0 1650	1435-1445 1550-1580 0-1,0				350-475 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b) (5a)		Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel mm		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1375	0,7 bar 75,0-76,0 (73,0-78,0)	1435-1445* 1300	LDA 500	0 bar 56,0-58,0 (54,0-60,0)	100	71,0-81,0 (68,0-84,0) = 14,3-14,7 mm R57	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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D. Adjustment Test for Manifold Pressure Compensator

MB 5,7 x 8

- 2 -

Test at n = 1375 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PES6A..RS2293 + RQV..AB1142L	0,70		11,3 - 11,4
		0	11,0 - 11,1
		0,28	11,1 - 11,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 9

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1000 AOB 1150 L

Komb.-Nr. 9 400 085 236

supersedes

company Daimler-Benz
engine OM 352 (A)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	10,0+0,1	6,0-6,1	0,3 (0,45)			
350	7,1-7,3	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,8	-	-	-	ca. 20	350	6,7	1000	10,0-10,1
	x =						100	min. 19,0	500	10,0-10,2
ca. 42	9,0	1040-1050					350	7,1-7,3	400	11,6-11,8
2a	4,0	1090-1120					430-500	= 2,0		
	1250	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1000	59,5-65,5 (57,5-62,5)	1040-1050*	-	-	200	14,2-14,8 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 10

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1400 AOB 1150

Komb.-Nr. 9 400 085 226

supersedes -

company Daimler-Benz

engine OM 352 (A)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$ mm (from BDC)
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,2-6,3	0,3 (0,45)			
350	7,1-7,3	0,9-1,5	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min mm 10 11	
lose	800	0,3-1,0	-	-	-	ca. 30	350	6,7	1380	10,0-10,1
	x = 4,0						100	min. 19,0	500	10,0-10,2
							350	7,1-7,3	400	11,6-11,8
ca. 61	9,0	1420-1430					460-680	= 2,0		
2a	4,0	1505-1535					700	max. 1,0		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /100 strokes 4 5		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
1380	61,5-62,5 (59,5-64,5)	1420-1430*	-	-	-	100	14,2-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 s 2

4. Edition

En

Testoil-ISO 4113

 PES 6 A 90 D 410 RS2293 EP/RSV 350-1400 AO B2002 L (1)
 AO B2053DL (2)

supersedes 10.82

company: Daimler-Benz

engine OM 352

(1 - 100kW - 130PS)

(2 - 82 kW - 111PS)

 Komb.-Nr. 0 400 876 265 (1)
 0 400 876 280 (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prostroke

(2, 10-2, 30)

mm (from RHC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery (1) cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery (2) cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,1 - 6,3	0,3(0,45)	9,0 +0,1	5,1 - 5,2	
350	7,1-7,3	0,9 - 1,5	0,2(0,4)	7,4-7,6	0,9 - 1,5	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

2002L (1)

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0				ca. 31	350	6,7	-	-
	x =	4,0					100	min. 19		
ca. 63	9,0	1420-1430					350	7,1-7,3		
⑤	4,0	1505-1535					560-	6,20=2,0		
	1600	0,3-1,7					700	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
(1) 1380	61,5 - 62,5 (59,5 - 64,5)	1420-1430*				100	14,2-14,8 mm RW	350	7,2
						1517	3,6- 4,6 mm RW		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

B. Governor Settings

2053DL (2)

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0				ca.29	350	7,0	1380	9,0
	x	= 4,0					100	min. 19	1000	9,5
ca.61	8,0	1420-1430					350	7,4-7,6	500	9,9
⑤	3,4	1455-1485					530-700	590=2,0 0 - 1		
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to						
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9
(2) 1380	51,0 - 52,0 (49,0 - 54,0)	1420-1430 *	1000	55,5 - 58,5 (53,5 - 60,5)	100	72,25 - 82,25	350	7,5
			⑥a 600	46,0 - 48,0 (44,0 - 50,0)				

Checking values in brackets

* 1 mm less control rod travel than col 2

Testoil ISO 4113**B. Governor Settings**

① Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9	10	11
⑤										

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit	③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp 40°C (104°F)		Note changed to						
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	4	5	6	7	8	9

Checking values in brackets

* 1 mm less control rod travel than col 2

①A

A7

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 r 5

1. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1500 A 2 B 741 L
A 2 C 741 L
Komb.-Nr. 0 400 876 273

supersedes
company Daimler-Benz
OM 352
engine 100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1450	9,9+0,1	6,8-6,9	0,3(0,45)			
350	7,4-7,6	1,9-2,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 21	350	7,5	-	-
	$X = 1,0$						100	min. 19,0		
ca. 60	8,9	1500-1505					350	7,4-7,6		
2a	3,4	1555-1570					435-495	=2,0		
	1650	0,3-1,7					550	max. 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to 1 rev/min							
rev/min	cm ³ /1000 strokes	3		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2			4	5	6	7	8	9
1450	67,5-68,5 (65,5-70,5)	1500-1505*	-	-	-	100	14,2-14,8 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

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12.84

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 5,7 r 3

3. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 350-750 AOB 741 L
Komb.-Nr. 0 400 876 267 AOC 741 L

supersedes 8.82

company Daimler-Benz
engine OM 352

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,1 - 2,3) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,8-9,9	5,0-5,1	0,3(0,45)			
350	6,4-6,6	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 22	350	6,5	-	-
	x = 2,0						100 min. 19,0			
ca. 34	750-755	8,8					370-430 = 2,0	**		
⑤	788-801	4,0								
	820	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	50,0-51,0 (48,0-53,0)	750 *		-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 6,1b1

2. Edition

En

PES6A85D 410/3 RS2366

EP/RS 325/1325 AOB 691 DL

supersedes 9.03

company KHD

engine BF6L913

88 kW/2650 min⁻¹

Komb.-Nr. 0 400 866 057

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque-control valve) mm 6
1325	11,4+0,1	7,6-7,7	0,3(0,45)			
200	8,9-9,1	1,6-2,2	0,3(0,05)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	VH ca. 66	325	6,0	850	11,9-12,1
	X = 7,0					FH ca. 30	400	2,7-3,7	500	11,9- 12,
VH ca. 66	10,4	1355-1365					800	2,7-2,9		
FH max.	4,0	1450-1480					1300	2,0-2,2		
2a	1630	0 - 1,0					1400	0 -1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note changed to) rev/min	3	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
rev/min 1	cm ³ /1000 strokes 2			4	5	6	7	8	9
LDA 1325	0,5 bar 75,5-76,5 (74,5-77,5)		1355-1365	LDA 500	0 bar 45,0-48,0 (43,5-49,5)	100	110,0-120,0		

Checking values in brackets

* 1 mm less control rod travel than col 2

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1.85

A10

A40

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 b 1

Test at n = 700 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PES 6 A...RS2366 + EP/RS...A0B691DL	0,50	0,38 0,10	11,4 - 11,5 11,1 - 11,2 9,4 - 9,8

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c

2. Edition

En

PES 4 A 80 D 410/3RS2523

RS 325/1400 AOB 699 DL
AOC 699 DL

Komb.-Nr.: 0 400 861 050

supersedes
company
engine

9.82
KHD
F 4 L 913
64 kW
/ 2800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 mm (from BDC)
(1,85-2,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	12,0+0,1	6,8-6,9	0,2(0,35)			
325	8,4-8,6	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				VHca.55	325	8,5	1400	12,0-12,1
	x	= 5,25				FHca.26	100	min.11,0	1090	12,2-12,5
VHca.55	1440-1450=11,0						425-455	= 5,5	550	12,8-12,9
2a FH max.	1500-1530= 4,0						180-230			
	1660=0,3 - 1,4									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	Control rod travel mm 9
1400	68,0-69,0 (66,5-70,5)	1440-1450*	800	61,5-63,5 (60,0-65,0)	-	-	325	8,5	
			550	60,5-62,5 (59,0-64,0)					

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c 3

2. Edition

En

PES 4 A 80 D 410/3 RS 2523

RSV 325-1400 A2B 1022 DL

superseded by 9.84

Komb.-Nr. 0 400 864 043

A2C 1022 L

company

engine

F4L 912

64 kW/2800 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,9-2,0$ mm (from BDC)
(1,85-2,05)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1400	12,0+0,1	7,0-7,1	0,2(0,35)			
325	8,8-9,0	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 21	325	5,0	1400	12,0-12,1
	X = 4,5						100	min. 19,0	935	12,2-12,4
ca. 58	11,0	1440-1450					325	5,4-5,6	500	13,2-13,3
②a	4,0	1515-1535					525-585	2,0		
	1650	0,3-1					700	0 - 1,0		

The numbers denote the sequence of the settings

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		Rotational speed limit	③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to rev/min			Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	70,0-71,0 (68,5-72,5)	1440-1450*	850	61,5-63,5 (60,0-65,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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2.85

A13

445

Test Oil 4113

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 8,3i

5. Edition

En

Testoil-ISO 4113

 PE 6 A 90 D 410 RS 2524 RQ 225/1200 AB 10u8 L
 Komb.-Nr. 0 400 646 251

 superseded 6.83
 company: DAF
 engine: DH 825

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) 2,30-2,40 RW9 mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,1 - 7,2	0,3(0,45)			
225	6,5-6,7	0,9 - 1,5	0,2(0,4)			

Port closing difference between control-rod travel 9 mm and max. = 4,5-5,5° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	19,2-20,8	650	20,0	8,4	1245-1260	225	8,7	100	min. 10,2	-	-
VH = max. 46°				4 150	1325-1355 0 - 1,0			225 410-450 550	8,6 - 8,8 = 2,0 max. 1,0		

Torque-control travel on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1000	71,0 - 72,0 (69,0 - 74,0)	600	-	-	100	128,0-138,0 (125,0-141,0) = 19,5 - 21,0 mm RW

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 DAF 8,3 k 2

2. Edition

En

PE 6 A 95 D 410 RS 2525 RQ 225/1200 AB 1156 L

Specifications apply to test tubing 1 680 750 015

Komb.-Nr. 0 400 646 268

supersedes 83
DAF
company
engine DH 825

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,0-2,1}
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,4+0,5	7,3-7,5	0,35(0,6)			
225	5,7-5,9	0,7-1,1	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications rev/min 9		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		Control rod travel mm 5		Control rod travel mm 8		Control rod travel mm 10		Control rod travel mm 12	
650 VH=	19,2-20,8 max. 46°	650	20,0	9,4 4,0 1400	1245-1260 1300-1330 0-1,0	225	5,8	100 225 310-350 450	min. 7,3 5,7-5,9 2,0 max. 1,0	1200 650 1035 1100	10,4-10,5 11,3-11,4 10,9-11,1 10,5-10,8

Torque-control travel on flyweight assembly dimension a = 0,35 mm Speed regulation: At 1245-1260 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
1200	73,0-75,0 (71,0-77,0)	-	-	800	74,5-77,5 (72,0-80,0)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW

Checking values in brackets

1.85

A15

BOSCH

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 DAF 8,3 k

7. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2525, Y, X

RQ 225/1200 AB 1007 L

superseded by 82

company DAF

engine DN 825 (Y.X)

DHR 825

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,95-2,15)

2,00-2,10 RW9

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,6+0,1	10,8 - 11,0	0,35(0,6)			
225	5,7-5,9	0,7 - 0,9	0,35(0,5)			
Port closing difference between control rod travel 9 mm and max. = 3 - 4° camshaft						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
650	19,2-20,8	650	20,0	11,6	1230-1245	225	5,8	100	min. 7,2	-	-
VH =	max. 46°			4,0 1390	1315-1345 0 - 1,0			225 340-380 450	5,7-5,9 = 2,0 max. 1,0		

Torque-control travel

on flyweight assembly dimension a = mm

Speed regulation: At 1230-1245 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
LDA	0,7 bar			LDA	0 bar	100	120,0-130,0
1000	108,5 - 110,5			600	84,5 - 87,5		(117,0-133,0)
X	(106,5 - 112,5)			X	(82,0 - 90,0)		= 19,5-21,0
1000	90,5 - 92,5	(12 mm RW)		600	77,0 - 80,0		mm RW
Y				Y			
1000	99,0 - 101,0	(12,5 mm RW)		600	77,0 - 80,0		

Checking values in brackets

1.85

D. Adjustment Test for Manifold Pressure Compensator

DAF 0,3 k

- 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE 6 A ..RS 2525 + ..AB 1007 L	0,7	0,30 0,26 0	12,6 - 12,7 12,3 - 12,4 11,7 - 12,0 11,5 - 11,6

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

W00 001/4 KHD 5,1 d

3. Edition

En

Testoil-ISO 4113

PES 5 A 80 D 410/3 RS2526

EP/RSV 325-1150 A3 B2014DL

supersedes 9.84

Komb.-Nr. 0 400 865 016

A8 C2014L

company K H D

engine F5 L912

63kW - 85PS

1 - 3 - 5 - 4 - 2
0 - 72-144-216-288° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,90-2,00 mm (from BDC)
(1,85-2,05)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque control valve) mm
1	2	3	4	2	3	6
1150	11,8	5,5 - 5,6	0,2(0,35)			
325	+0,1 9,0-9,2	0,9 - 1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0				ca. 21	325	5,0		+0,1
	X =	4,75					100	min. 19	1150	11,8
							325	5,4-5,6	950	12,1
ca. 55	10,8	1190-1200					390-450	= 2,0	775	12,7
⑤	4,0	1235-1265					500	0 - 1	450	12,8
	1350	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes			rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1150	55,5 - 56,5 (54,0 - 58,0)	1190-1200 *		775	57,0 - 59,0 (55,5 - 60,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 6,0 a 1

1. Edition

PES 6 A 90 D 410 RS 2667

RQV 300-1400 AB 1201 L

Komb.-Nr. 0 400 846 535

Specifications apply to test tubing 1 680 750 015

supersedes -

company: Daimler-Benz

engine: OM 366

100 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,25-2,35 mm (from BDC)
(2,20-2,40)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	11,1+0,1	6,4-6,5	0,3(0,45)			
300	8,7-8,9	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1500	15,2-17,8	-	-	-	ca. 21	100	min. 10,3	300	0,8-1,3
ca. 61	10,1	1440-1450					300	8,7-8,9	500	2,3-2,8
	4,0	1545-1575					580-640=2,0		750	4,1-4,3
	1630	0-1,0							1500	8,5

Torque control travel a = 1,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
1400	63,5-64,5 (61,5-66,5)	1440-1450*	500	51,0-54,0 (48,5-56,5)	100	78,0-88,0 (75,0-91,0)	1400	11,1+0,1
			900	53,5-56,5 (51,0-59,0)		= 16,4-17,0 mm RW	500	12,2+0,1
							900	11,7+0,2
							1100	11,5+0,3

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 g

6. Edition

En

PE 6 P 110 A 320 RS 413 RQV 250-1200 PA 499

Komb.-Nr. 0 401 846 432

supersedes 1.83

company Volvo

engine TD 70 F

174 kW (237 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $3,0-3,1$
 $(2,95-3,15)$ mm (from BDC) = RW 9,0-12,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
700	12,2+0,1	12,5-12,7	0,4(0,75)			2,5 \pm 0,1 (2,2-2,9)
250	5,2-5,4	1,6-2,0	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1200	15,2-17,8	-	-	-	ca. 9	100	min. 6,7	200	0,6-0,9
ca. 62	11,2	1240-1250					250	5,2-5,4	530	3,2-3,6
	4,0	1370-1400							870	5,8-6,0
	1500	0 - 1,0				300-410			1200	8,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 700	0,7 bar 125,0-127,0 (122,0-130,0)	1240-1250 *	LDA 700	0 bar 79,0-82,0 (76,0-85,0)	100	170,0-210,0 = 20,0-21,0 mm RW	-	-	
					250	16,0-20,0			

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

Test ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

VOL 7,0 g

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure - bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 413 + RQV..PA 499	0,70	0 0,54 0,17	12,2 - 12,3 9,6 - 9,7 12,0 - 12,1 9,7 - 9,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 7,0 g2

2. Edition

PE 6 P 110 A 320 RS 413 X RQV 250-1200 PA 499
Komb.-Nr. 0 401 846 470

superseded by 7.83
Volvo
company TD 70 FC
engine.

En

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
(2,95-3,15) mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,3+0,1	12,7-13,0	0,4(0,8)			2,5 ⁺ 0,1
250	5,2-5,4	1,6-2,0	0,3(0,6)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 9	100 250	min. 6,7 5,2-5,4	200 530 870 1200	0,6-0,8 3,1-3,5 5,6-5,9 7,9
ca. 62	11,3 4,0 1500	1240-1250 1370-1400 0-1,0				300-410 ③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed Limitation Intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 127,0-130,0 (124,0-133,0)	1240-1250*	LDA 700	0 bar 79,0-82,0 (76,0-85,0)	100 250	170,0-210,0 =20,0-21,0 mm RW	-	-
						16,0-20,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

D. Adjustment Test for Manifold Pressure Compensator

VOL 7,0 g 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 413 X + RQV..PA 499	0,90	0 0,62 0,24	12,3 - 12,4 9,6 - 9,7 12,1 - 12,2 9,7 - 9,9

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 ROL 16,2 a 1

2. Edition

En

PE 8 P 120 A 920/4 RS 3047

RQ 900 PA 491

Komb.-Nr. 0 401 848 716

1 - 6 - 2 - 5 - 8 - 3 - 7 - 4 je $45^{\circ} \pm 0,5^{\circ} (\pm 0,75^{\circ})$

supersedes 3.84

company: Rolls Royce

engine C 8 TCA
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65)

mm (from 80°) RW= 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,4+0,1	22,0-22,2	0,5 (0,9)			
300	5,1-5,3	2,1-2,7	0,8 (1,2)			
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ①				Idle speed regulation Setting point ①				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	12,4 4,0 1050	900-905 932-941 0-1,0	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a =

mm

Speed regulation: At 900-905 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
850	220,0-222,0 (217,0-225,0)	-	-	-	100	19,5-21,0 mm RW

Checking values in brackets

1.85

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 m 2

1. Edition

En

PE 6 P 110 A 720 RS 3006 RQV 200-1100 PA 383 KR

Komb.-Nr. 0 401 846 711

supersedes
company: Scania
engine: DS 1102

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,3-3,4}{(3,25-3,45)}$ mm (from BDC), RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	13,0+0,1	15,6-15,8	0,6(0,8)			2,5 [±] 0,1 (2,2-2,9)
225	5,7-5,9	0,9-1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 11	100	min. 7,2	150	0,5-0,8
ca. 63	13,0 4,0 1400	1140-1150 1270-1300 0-1,0					225	5,7-5,9	470	3,7-3,9
							360-420	2,0	780	5,3-5,4
									1100	8,0

Torque control travel a = 0,8 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 850	0,9 bar 156,0-158,0 (154,0-160,0)	1140-1150*	LDA 1100	0 bar 176,5-179,5 (174,0-182,0)	100	190,0-240,0 =20,0-21,0 mm RW	1100	14,0+0,1
			LDA 500	0 bar 133,0-137,0 (131,0-139,0)			850	13,0+0,1
							600	13,2+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

BOSCH

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D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 m 2

-2-

Test at n = 850 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3006 +RQV..PA 383 UR	0,90	0 0,40 0,25	14,0-14,1 11,8-11,9 12,9-13,0 11,9-12,1

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

SCA 11,0 y 1

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12.0 c 2

1. Edition

En

PE 6 P 120 A 320 RS 3032 Y RQV 250-1100 FA 355/2 R

Komb.-Nr. 0 401 846 718

supersedes -

company: Volvo

engine: TD 120 C

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,6-2,7}{(2,65-2,75)}$ mm (from BDC) 7yl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	20,1-20,4	0,4(0,8)			2,5 [±] 0,1
250	5,3-5,5	0,9-1,3	0,3(0,6)			(max.2,2-2,9) **

Adjust the fuel delivery from each outlet according to the values in

** In case valve-spring spread is higher, change the initial tension accordingly.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10	100 250 300-360=2,0	min.6,9 5,3-5,5	200 500 800 100	0,7-0,9 2,9-3,2 5,0-5,3 7,7
ca. 45	10,4 4,0 1320	1160-1170 1230-1260 0-1,0				3a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b Limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 201,0-204,0 (198,0-207,0)	1160-1170*	LDA 700	0 bar 148,0-152,0 (145,0-155,0)	100 250	410,0-460,0 9,0-13,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 c ?

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3032 Y +RQV..PA 355/2 R	0,49	0,14	11,1-11,2 9,2-9,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 8,0 1 1

4. Edition

En

PE 6 P 110 A 720 RS 3034 Z RQV 200-1200 PA 554
Komb.-Nr. 0 401 846 770

superseded by 84
company: Saab Scania
engine: DS8 05

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,3 - 3,4$
(3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,8+0,1	10,1 - 10,3	0,5(0,7)			25 ± 0,1
225	5,9-6,1	1,5 - 1,9	0,2(0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1220	15,2-17,8	-	-	-	ca. 16	100	min. 7,4	150	0 - 1,0
ca. 61	10,8 4,0 1500	1240-1250 1360-1390 0 - 1,0					225 410-470 = 2,0	5,9-6,1	500 850 200	3,4-3,9 5,4-5,8 7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 101,0-103,0 (99,0-105,0)	1240-1250*		LDA 1200	0,9 bar 110,5-115,5 (108,0-118,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-
				LDA 500	0 bar 85,0-89,0 (83,0-91,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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D. Adjustment Test for Manifold Pressure Compensator

SCA 8,0 i 1

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE 6 P..RS 3034 Z + RQV..PA 554	0,90	0 0,21	11,8 - 11,9 11,6 - 11,7 11,7 - 11,8

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SCA 11,0 y 1

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

Test Specifications Fuel Injection Pumps ①A and Governors

40

WPP 001/4 SCA 11,0 r 7

2. Edition

En

PE 6 P 110 A 720 RS 3040-1 RSV 350-1100 P 1/505

Komb.-Nr. 0 401 876 734

superseded 12.83

company Scania

engine DS 11 05

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,3 - 3,4$ mm (from BDC) $RW = 9,0 - 12,0$ mm
(3,25-3,45)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	13,1+0,1	15,6-15,8	0,6 (0,8)			3,3 ± 0,1
350	4,4-4,6	1,8-2,2	0,2 (0,4)			(3,0 - 3,5)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 30	350	4,0	-	-
	x = 6,0						350	4,4 - 4,6		
							440-500	= 2,0		
ca. 66	12,1	1140-1150								
②a	4,0	1210-1240								
	1350	0,3- 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to .) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1100	156,0-158,0 (154,0-160,0)	1140-1150*	700	156,5-161,5 (154,0-164,0)	100	240,0-290,0 = 20,0 - 21,0 mm RW	350	4,4-4,6	

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Testoil:CO 41-13

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 5.10.1983
- Start of fuel delivery-engine: 20° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 3

1. Edition

En

PE 6 120 A 320 RS 3050 RQV 250-1100 PA 460 R
Komb.-Nr. 0 401 846 720
Values only apply to test nozzle-and-holder ---
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -
company: Volvo
engine: TD 120 F
283 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,4-2,5}{(2,35-2,55)}$ mm (from BDC) RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	23,0-23,3	0,5(0,9)			2,5 [±] 0,1 (2,2-2,9)
250	3,6-3,8	1,8-2,3	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1175	15,2-17,8	-	-	-	ca. 8	100	min. 5,1	200	1,6-1,7
ca. 60	11,8	1140-1150					250	3,6-3,8	500	3,1-3,4
	4,0	1230-1260					300-360=2,0		800	4,9-5,1
	1350	0 - 1,0				③a			1100	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control travel ⑤ rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9
LDA 700	1,2 bar 230,0-233,0 (227,0-236,0)	1140-1150*	LDA 700	0 bar 138,0-142,0 (135,0-145,0)	- 250	- 18,0-23,0	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 d 3 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE6P.. RS 3050 +RQV..PA 460 R	1,20	0 0,82 0,07	12,8-12,9 9,1-9,2 12,6-12,7 9,2-9,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

NPP 001/4 SCA 11,0 s

4. Edition

En

Testoil-ISO 4113

 PE 6 P 110 A 720 RS3065
 Komb.-Nr. 0 401 846 721

RQV 250-1100 PA468R

supersedes 83

company Scania

engine: DN 11 01

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,30-3,40}
 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5±0,1	13,5 - 13,7	0,5(0,8)			2,5±0,1 (max. 2,2-2,9)
225	5,8-6,0	0,9 - 1,3	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 10	100	min. 7,3	200	0,3-1,3
ca. 6°	11,5	1140-1150					225	5,8-6,0	700	4,8-5,2
	4,0	1250-1280					345-405	2,0	120	8,2
	1400	0 - 1,0				③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b Limitation intermediate speed 4a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	135,0-137,0 (133,0-139,0)	1140-1150*	600	131,5-136,5 (129,0-139,0)	100	190,0-240,0 15 - 19	-	-
					225			

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

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S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 KHD 15,8 g

4. Edition

En

PE 10 P 110 A 920/5 LS 3073
Komb.-Nr. 0 401 849 702

RQ 300/1150 PA 535

superseded 9.83

company KHD

engine: BF 10 L 413 F

265 kW/2050 min⁻¹bzw. 259 kW/2300 min⁻¹
(Maxidyne)

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,75-2,95) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
800	12,0+0,1	14,4-14,6	0,4(0,75)			
300	6,9-7,1	1,8-2,4	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
550	19,2-20,9	550	20,0	9,8	1195-1210	300	7,0	100	min.8,4	1150	10,7-10,9
VH =	max. 46°			4,0	1220-1250			300	6,9-7,1	800	12,0-12,1
				1350	0-1,0			340-380	= 2,0		

Torque-control travel
on flyweight assembly dimension a =

0,75

mm

Speed regulation: At

1195-1210 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA	0,9 bar	-	LDA	0 bar	100	115,0-145,0
800	144,0-146,0 (141,0-149,0)		500	98,0-102,0 (95,0-105,0)		(111,0-149,0)

Checking values in brackets

1.85

Test ISO 4113

BOSCH

Geschäftsbereich Kfz, Kundendienst, Kfz-Ausrüstung.
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D. Adjustment Test for Manifold Pressure Compensator

KHD 15,8 g

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE10P..LS3073 + RQ..PA535	0,90	0 0,50 0,35	12,0-12,1 10,0-10,1 11,5-11,6 10,4-10,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 k

2. Edition

En

PE 6 P 120 A 320 RS 3118 RQV 250-1025 PA 657
Komb.-Nr. 0 401 846 772
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

superseded 2.83

company: Volvo

engine: TD 121 F

282 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,6 - 2,7}
(2,55-2,75) mm (from BDC): RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,3+0,1	23,8-24,1	0,5(0,9)			2,5 ± 0,1
250	3,3-3,5	1,8-2,3	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1090	15,2-17,8	-	-	-	ca. 10	100	min. 4,8	200	0,7-0,9
ca. 65	12,3	1065-1075					250	3,3-3,5	430	3,5-3,9
	4,0	1130-1160							660	6,4-6,6
	1250	0-1,0					285-345=2,0		-	7,6
						3a			945	
									1025	

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 238,0-241,0 (235,0-244,0)	1065-1075*	LDA 700	0 bar 138,0-142,0 (135,0-145,0)	100	240,0-280,0 = 20,0-21,0 mm RW	-	-
					250	18,0-23,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 k

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3118 + RQV..PA 657	0,90	0	13,3 - 13,4
		0,77	8,5 - 8,6
		0,17	13,1 - 13,2
			8,6 - 8,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

① WPP 001/4 MB 14,6 k 2

1. Edition

En

PE 8 P 120 A 320 LS 3807-10 RQV 300-1150 PA 545-2
Komb.-Nr. 0 401 848 762

supersedes -
company: Daimler Benz
OM 422 A
engine: 243 kW

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) Cyl. 8
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,3-15,5	0,5(0,9)			
300	5,2-5,4	1,2- 1,8	0,8(1,2)			
750	-					
500	-	C, Sp 4 u. 5	0,7(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min. 6,7	300	1,6-1,8
ca. 54	9,5	1190-1200					300	5,0-5,2	800	6,0-6,2
	4,0	1235-1265					335-405= 2,0		1200	8,1-8,3
	1350	0-1,0							1260	9,9

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b	Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	rev/min 6	rev/min 8
LDA 1150	0,7 bar 153,0-155,0 (150,0-158,0)	1190-1200*	LDA 750 0,7 bar 169,0-172,0 (166,0-175,0) LDA 500 0 bar 139,0-141,0 (136,0-144,0)	100	140,0-160,0 (136,0-164,0)
					750

Checking values in brackets

* 1 mm less control rod travel than col. 2

12.84

BOSCH

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 k 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 380"-10 +RQV..PA 545-2	0	0,45 0,50	10,3-10,4 10,4-10,5 10,8-11,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MB 18,3 c

4. Edition

En

PE 10 P 110 A 320 LS 3818 RQ 300/1150 PA 437-2

superseded 7s, 84

company Daimler-Benz

engine OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 705

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4
0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) $\gamma_{1.10}$;

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,1+0,1	12,4 - 12,6	0,4 (0,8)			
300	7,9-8,1	1,2 - 2,0	0,4 (0,7)			
600	-	C, Sp. 4 u.5	0,6(0,9)			
900						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	13,0-14,0	600	13,5	10,1 4,0 1350	1190-1205 1225-1255 0 - 1,5	300	6,1	100 300 430-470	min. 9,5 7,9-8,1 2,0	1150 600 900	11,1+0,1 11,7+0,2 11,6+0,2

Torque-control travel
on flyweight assembly dimension a = 0,2 mmSpeed regulation: 1190 - 1205 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1150	124,0-126,0 (121,5 - 128,5)	-	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)
			900	118,0-123,0 (115,0-126,0)		

Checking values in brackets

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 1

3. Edition

En

PE 10 P 110 A 320 LS 3818-1 RQV 350-1150 PA 678

1 - 8 - 7 - 6 - 3 - 5 - 2 - 10 - 9 - 4

0 -27 -72 -99 -144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 9.83

company: Daimler-Benz

engine OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 709

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC) Zyl. 10
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			
900						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min. 10,2	300	1,2-1,4
ca. 64	11,0	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1240-1270							870	5,2-5,6
	1400	0-1,0				350-500			1150	7,8
						③a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control ⑤ travel rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9
1150	122,0-124,0 (119,0-127,0)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	150,0-170,0 (146,0-174,0)	1150	12,0+0,1
1150	92,0-94,0 (89,0-97,0) **		900	118,0-123,0 (115,0-126,0)			600	12,7+0,1
							900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d 2

1. Edition

En

PE 10 P 110 A 320 LS 3818-11
Komb.-Nr. 0 401 849 713

RQV 350-1150 PA 678

supersedes

company Daimler-Benz

engine: OM 423

261 kW

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$
(3,95-4,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,0+0,1	12,2-12,4	0,4(0,8)			
350	8,5-8,7	1,4-2,2	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1200	15,2-17,8	-	-	-	ca. 14	100	min. 10,2	300	1,2-1,4
ca. 64	11,0	1190-1200					350	8,5-8,7	580	3,6-3,9
	4,0	1240-1270							870	5,2-5,6
	1400	0-1,0				350-500			1150	7,8

Torque control travel a = 0,75 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	122,0-124,0 (119,5-126,5)	1190-1200*	600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,0+0,1
1150	92,0-94,0 (89,5-96,5) **		900	118,0-123,0 (115,0-126,0)			600	12,7+0,2
							900	12,3+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 2

2. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 1050 PA 634-1

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

supersedes 9.83

company: Daimler-Benz

engine: OM 424 A

385 kW

Komb.-Nr. 0 401 840 715

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $4,0-4,1$
 $(3,95-4,15)$ mm (from BDC) Zyl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	11,9+0,1	18,1-18,3	0,5(0,9)			
300	5,5-5,7	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		Control rod travel mm 12		Control rod travel mm 12	
-	-	-	-	10,9 4,0	1050-1055 1090-1110	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1050-1055 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7	
1000	181,0-183,0 (178,0-186,0)	-	-	-	-	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

1.85

Test Oil ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 6

1. Edition

En

PE 12 P 120 A 320 LS 3819 RQ 900 PA 634-2

supersedes...

company: Daimler-Benz

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5 ° (±0,75°)

engine: OM 424 A

374 kW

Komb.-Nr.

0 401 840 704

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4, 0-4,1
(3,95-4,15) mm (from BDG) 2yl. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,8+0,1	18,3-18,5	0,5(0,8)			
300	5,2-5,4	1,2-2,0	0,8(1,2)			

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Setting point rev/min 3		Control rod travel mm 4		Test specifications rev/min 5		Setting point rev/min 7		Control rod travel mm 8		Test specifications rev/min 9		Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
-	-	-	-	-	-	-	-	10,8 4,0 1050	900-905 932-942 max. 1,0	-	-	-	-	-	-	-	-	-	-	-	-

Torque-control travel

on flyweight assembly dimension a = mm

Speed regulation: At

900-905 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
850	183,0-185,0 (180,0-188,0)	-	-	-	-	100	160,0-180,0 (156,0-184,0)	-	-

Checking values in brackets

1.85

Test ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 21,9 a 4

1. Edition

En

PE 12 P 120 A 320 LS 3819-1 RQ 750 PA 635

supersedes

1- 5- 9- 8- 3- 4- 11- 10- 2- 6- 7- 12

company: Daimler-Benz

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

engine: OM 424 A

Values only apply to test nozzle-and-holder

316 kW

assembly 1 688 901 019 and fuel-injection test

Komb.-Nr. 0 401 840 720

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDE) 1. 12

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9+0,1	19,3-19,5	0,5(0,8)			
300	4,9-5,1	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		rev/min 11		Torque control Control rod travel mm 12	
-	-	-	-	10,9 4,0	750-755 780-790	-	-	-	-	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
cm ³ /~1000 strokes 2	cm ³ /~1000 strokes 5	cm ³ /1000 strokes/mm 7					
700	193,0-195,0 (190,0-198,0)	-	-	-	-	100	160,0-180,0 156,0-184,0)

Checking values in brackets

1.85

BOSCH

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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH.

B24

B34

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 21,9 b 2

1. Edition

En

PE 12 P 120 A 320 LS 3819-1

RQV 350-1150 PA 493-3

supersedes

company Daimler-Benz

engine OM 424 LA

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (± 0,75°)

Komb.Nr. 0 401 840 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BDC)

RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	18,0-18,2	0,5(0,9)			
350	4,8-5,0	1,4-2,0	0,8(1,2)			
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 12	100	min.6,2	350	2,2-2,3
ca. 65	11,1 4,0 1350	1190-1200 1240-1270 0-1,0					350	4,5-4,7	510	3,2-3,5
							400-600		1150	7,5-8,8
									1200	9,0

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b Limitation intermediate speed	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 180,0-182,0 (177,0-185,0)	1190-1200*	LDA 650	0,7 bar 179,0-185,0 (176,0-188,0)	100	150,0-170,0 (146,0-174,0)	-	-
LDA 1150	0,7 bar 134,0-138,0		LDA 500	0 bar 131,0-133,0 (128,0-136,0)	350	4,5-4,7 mm RW		
**	(131,0-141,0)							

Checking values in brackets

* 1 mm less control rod travel than col. 2

** Set at the reduced-delivery stop.

1.85

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D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 b 2 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel ⁽¹⁾ diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm
PE12P..LS3819-1 + RQV..PA493-3	0,70	0 0,54 0,47	12,1-12,2 10,1-10,3 11,4-11,5 10,6-10,8

Notes

(1) when n = rev/min and gauge pressure - bar (- maximum full load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 12 P 120 A 320 LS 3819-2 RQ 300/1050 PA 656

1- 5- 9- 8- 3 - 4 - 11- 10- 2 - 6 - 7 - 12

0-15-60-75-120-135-180-195-240-255-300-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 11.83

company: Daimler-Benz

OM 424 LA

engine: 441 kW

Komb.-Nr.0 401 840 713

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

4,0-4,1
(3,95-4,15)

mm (from BDZyl. 12; RW = 9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1050	12,7+0,1	19,6-19,8	0,5(0,9)			
300	5,5-5,7	1,4-2,0	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,1-20,8	600	20,0	11,8	1085-1095	300	5,6	100	min. 6,0	-	-
VH =	max. 46°			4,0	1165-1195			300	5,5-5,7		
				1300	0-1,0			360-400	=2,0		

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1085-1095 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes / mm 7
LDA 1050	0,8 bar 196,0-198,0 (193,0-201,0)	-		LDA 500	0 bar 141,0-143,0 (138,0-146,0)	100	170,0-190,0 (166,0-194,0)

Checking values in brackets

Test oil ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MB 21,9 d

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel: diminution difference mm (1)
PE 12 P..LS 3819-2 +RQ..PA 656	0	0,49 0,59	10,7-10,8 11,2-11,4 12,0-12,2

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WVP 001/4 BAO 15,9 b

1. Edition

En

PES 6P 120 A 320 RS 7105

RQV 400-750 PA 730-1

Komb.-Nr. 0 402 746 803

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes...

company: Baudouin

engine: 6 P 15-2

450 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,6-3,7}{(3,55-3,75)}$ mm (from BDC); RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,2+0,1	41,9-42,1	0,5 (0,9)			
400	4,5-4,7	1,7-2,3	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 25	11,2 4,0 900	750-755 776-789 0 - 1,0	-	-	-	ca. 8	100 400	min. 6,1 4,5-4,7	400 420 - 700 750	1,1-2,0 2,0 4,3

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	419,0-421,0 (416,0-424,0)	750-755 *	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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C5

C5

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Test ISO 4113

VE 6/11 F 1500 L 19-6

Overflow temperature 45° C

0 460 416 013

Setting of the pointer at a stroke of 1,0 mm in relation to outlet "A".

 superseded by 4 82
 Volvo
 company:
 engine: T AMD 40-A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04) mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1200	2,4-2,8 mm		
1.2 Supply pump pressure	1200	4,7-5,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure		cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	69,5-70,5 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	350	18,0-22,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	1550	38,0-44,0 cm ³ /1000 strokes		
1.6 Start	100	min. 70 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 0,8-1,6 (0,5-1,9)	1200 (1,9-3,3)	1500 3,6-4,4 (3,3-4,7)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 1,9-2,5		1500 5,7-6,3
Overflow delivery	n = rev/min cm ³ /10 s	600 42-83 (27-98)		1500 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	1850 1750 1650 1550 1400 1200 600	max. 2,0 max. 3,0 23,5-30,5 (22,5-31,5) (36,5-45,5) (67,4-72,6) 67,0-69,0 (65,4-70,6) 53,5-58,5 (52,6-59,4)		K KF MS SVS max. 2,3
switch-off	1500	0		AXK BXL 18,7-20,7 7,8-11,1
Idle stop	580 500 350	max. 1,5 min. 1,5 (15,5-24,5)		Observations
End stop	100 120 220	min. 70 min. 70 max. 70		
2.4 Solenoid	max. cut-in voltage	xxx 10 V xxxxxxx rated voltage 12V.		

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 4/9 F 2150 L 31-1

Overflow temperature 45° C

0 460 494 133

 superseded **8.84**
 company: **Motori VM**
 engine: **HR 488 HT**

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1900	6,4-6,8 mm	0,8	
1.2 Supply-pump pressure	1900	5,7-6,3 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1600	46,5-47,5 cm ³ /1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	600	31,5-32,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	8,0-12,0 cm ³ /1000 strokes	0	3,0
1.5 Full-speed regulation	2300	27,5-33,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 44,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1(1,0-2,4)	1900 (5,9-7,3)	2150 7,5-8,3(7,2-8,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,0-2,6		2150 6,3-6,9
Overflow delivery	n = rev/min cm ³ /10 s	600 42-83(27-98)		2150 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 2,0	0,8
	2450	max. 10,0	0,8
	2300		0,8
	2150	40,0-43,0 (26,5-34,5)	0,8
	1600	(39,2-43,8)	0,8
	600 *	(44,7-49,3)	0,8
	600	39,3-41,3 (37,6-42,0)	0,27
	600	(29,8-34,2)	0
switch-off			
Idle stop	800	max. 2,0	
	500	max. 6,0	
	400	(6,0-14,0)	
End stop	350	min. 44	
	450	max. 43	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,3
KF	5,7-5,9
MS	0,7-0,9
SVS	5,6
A	
B	

Observations

 * Manifold-pressure
compensator stroke
= 3,8 mm

2.4 Solenoid	max. cut-in voltage xxx min. 10. V
	test voltage xxx rated voltage 12V.

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Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

 VE 4/9 F 2250 R 84
 0 460 494 079

Overflow temperature 45° C

 superseded by 12.83
 company: Peugeot
 engine: XD 3

 Test pressure line
 DHK: 1 688 901 022/130 bar 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,4-5,8 mm		
1.2 Supply-pump pressure	1500	5,6-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	38,9-39,9 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	400	6,0-10,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2325	25,5-31,5 cm ³ /1000 strokes		
1.6 Start	100	min. 45 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,6-1,4 (0,3-1,7)	1000 2,5-3,1 (2,1-3,5)	1500 (4,9-6,3)	2000 8,1-8,9 (7,8-9,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2200 7,5-8,1	
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)		2250 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2450 2325 2200 2000 1500 1000 600	max. 2,0 4,5-12,5 (4,5-12,5) (24,5-32,5) 40,9-42,9 (39,6-44,2) 40,2-42,2 (38,9-43,5) (37,1-41,7) 38,2-40,8 (37,2-41,8) 36,8-39,8 (35,3-41,3)	
switch-off			
Idle stop	400	(4,0-12,0)	
End stop	440 350 450	max. 2,0 min. 45 max. 45	
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V rated voltage 12V.	

3. Dimensions

 for assembly
and adjustment
mm

Designation	
K	K 1
KF	5,2-5,4
MS	0,9-1,2
SVS	3,3
A	
B	
Observations	

Test Specifications Distributor-type Fuel-injection Pumps

46
WPP 001/4 IBE 4,0 b

1. Edition

En

Test Oil ISO 4113

VE 4/12 F 1300 R 103-1
0 460 424 017
DHK: 1 688 901 020

Overflow temperature 45° C

supersedes
company: Iberica
engine: T 4.236

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	4,0-4,4 mm	0,8	
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	800	94,0-95,0 cm ³ /1000 strokes	0,8	4,0
Full-load delivery without charge-air pressure	500	66,0-67,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	300	6,0-12,0 cm ³ /1000 strokes	0	3,5
1.5 Full-speed regulation	1400	64,0-72,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 70 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	500 0,4-1,2 (0,1-1,5)	1000 (3,5-4,9)	1300 5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	500 3,3-3,9	1300 6,7-7,3	
Overflow delivery	n = rev/min cm ³ /10 s	500 41-83 (26-98)	1300 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1640 1580 1400 1300 800 800* 500	max. 1,0 max. 5,0 (63-73) 84,5-87,5 (83,0-89,0) (91,5-97,5) 91,0-92,0 (88,5-94,5) (62,8-70,2)	0,8 0,8 0,8 0,8 0,8 0,42 0
switch-off			
Idle stop	430 370 300 110 210	max. 1,0 max. 3,0 (4,0-14,0) min. 70 max. 70	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	1,1-1,3
SVS	5,0
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,2 mm

2.4 Solenoid

max. cut-in voltage xxxxx min. 10 V
rated voltage 12V.

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 SOF 2,5 L

1. Edition

En

Test-Specifications

VE 4/10 F 2050 R 124-1
0 460 404 041

Overflow temperature 45° C

supersedes
company: Iveco-Sofim
engine: 8144.81.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
	1500	5,3-5,7	0,8	
1.1 Timing device travel	1500	6,1-6,7 mm	0,8	
1.2 Supply-pump pressure	1500	54,0-55,0 bar (kgf/cm ²)	0,8	3,0
1.3 Full-load delivery with charge-air pressure	600	43,5-44,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	350	12,5-16,5 cm ³ /1000 strokes	0	3,0
1.4 Idle regulation	2250	37,0-43,0 cm ³ /1000 strokes	0,8	
1.5 Full-speed regulation	100	min. 60 cm ³ /1000 strokes	0	
1.6 Start	1500	-	0	
1.7 Load-dependent port-closing			0	

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	600 0,9-1,7 (0,6-2,0)	1500 (4,8-6,2)	2050 7,6-8,4 (7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	400 3,4-4,0	600 4,0-4,6	2050 7,4-8,0
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83 (26-98)	2050 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2430	max. 2,0	0,8
	2350	12,0-19,0 (11,0-20,0)	0,8
	2300	26,5-32,5 (25,0-34,0)	0,8
	2250	(35,5-44,5)	0,8
	2050	46,5-49,5 (45,3-50,7)	0,8
	1500	(51,8-57,2)	0,8
	700	47,0-48,0 (44,8-50,2)	0,22
	600	(41,3-46,7)	0
switch-off			

Idle stop	500	max. 3,0	
	450	min. 1,0	
	350	(10,0-19,0)	
	350	min. 55	
End stop	450	max. 55	

2.4 Solenoid	max. cut-in voltage	xxxx min. 10 V
	test voltage	rated voltage 12V.

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-6,0
MS	1,2-1,4
SVS	2,8
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 2,8 mm

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1.85

C10

C40

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 k

3. Edition

En

Testoil-ISO 4113

VE 4/9 F 2075 R 126

Overflow temperature 45° C

0 460 494 121

Test pressure line

DHK: 1 688 901 022/130 bar

6x2x450/1 680 750 073

 supersedes 3.84
 company: Peugeot
 engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,8 - 6,2 mm	0,8	
1.2 Supply-pump pressure	1500	5,6 - 6,2 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7 cm ³ /1000 strokes	0,8	(2,5 (3,0))
Full-load delivery without charge-air pressure	500	41,3-42,3 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	26,5-32,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 67,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA=0,8 bar	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA=0,8 bar	bar (kgf/cm ²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500		2075	
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 1,0	0,8
	2300	(25,5-33,5)	0,8
	2200	39,5-45,5 (38,5-46,5)	0,8
	2000	52,2-54,2 (50,9-55,5)	0,8
	1500	(51,9-56,5)	0,8
	1000	51,8-54,8 (51,0-55,6)	0,8
	750*	46,8-47,8 (45,0-49,6)	0,25
	500	(39,5-44,1)	0
switch-off			
elektr.	400	0	
Idle stop	500	max. 1,0	
	400	8,0-12,0 (6,0-14,0)	
	350	(18,0-26,0)	
End stop	230	min. 60	
	330	max. 60	
2.4 Solenoid	max. cut-in voltage xx min. 10 V rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	K 1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

 Manifold-pressure
 compensator stroke
 = 4,5 mm
 Correction at the
 adjusting nut. (46)

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1.85

C11

C44

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Testoil-ISO 4113

VE 4/9 F 2075 R 126-1

Overflow temperature 45° C

0 460 494 123

Test pressure line

DHK: 1 688 901 022/130 bar

6x2x450/1 680 750 073

 superseded by 84
 company: Peugeot
 engine: XD 3 S

All test specifications are valid only for Bosch Fuel injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,8-6,2 mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7 cm ³ /1000 strokes	0,8	(2,5 (3,0))
Full-load delivery without charge-air pressure	500	41,3-42,3 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	17,0-21,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2350	26,5-32,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 67,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA=0,8 bar	mm	0,8-1,6(0,5-1,9)	2,5-3,3(2,7-3,6)	(5,3-6,7)	7,8-8,6(7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA=0,8 bar	bar (kgf/cm ²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500	2075		
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650	max. 1,0	0,8
	2350	(25,5-33,5)	0,8
	2250	38,5-44,5 (37,5-45,5)	0,8
	2000	52,2-54,2 (50,9-55,5)	0,8
	1500	(51,9-56,5)	0,8
	1000	51,8-54,8 (50,3-56,3)	0,8
	750*	46,8-47,8 (45,0-49,6)	0,25
	500	(39,5-44,1)	0
switch-off			
elektr.	400	0	
Idle stop	400	(15,0-23,0)	
	450	5,0 - 9,0 (3,0-11,0)	
	550	max. 3,5	
End stop	230	min. 60	
	330	max. 60	
2.4 Solenoid	max. cut-in voltage		
	test voltage		

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations

Manifold-pressure
compensator stroke
= 4,5 mm
Correction at the
adjusting nut. ()

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 2,3 k 1
2. Edition

En

Test ISO 4113

VE 4/9 F 2075 R 126-2

Overflow temperature 45° C

0 460 494 155

Test pressure line

DHK: 1 688 901 022/130 bar

6x2x450/1 680 750 073

superseded by
company: Peugeot
engine: XD 3 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,8-6,2 mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7 cm ³ /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	41,3-42,3 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	26,5-32,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 67,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	750 0,8-1,6 (0,5-1,9)	1000 2,5-3,3 (2,7-3,6)	1500 (5,3-6,7)	2000 7,8-8,6 (7,5-8,9)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	200 1,4-2,0	750 3,4-4,0	2000 7,1-7,7	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	2075 55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 1,0	0,8
	2300	(25,5-33,5)	0,8
	2200	39,5-45,5 (38,5-46,5)	0,8
	2000	52,2-54,2 (50,9-55,5)	0,8
	1500	(51,9-56,5)	0,8
	1000	51,8-54,8 (50,3-56,3)	0,8
	750*	46,8-47,8 (45,0-49,6)	0,25
	500	(39,5-44,1)	0
switch-off			
elektr.	400	0	
Idle stop	500	max. 1,0	
	400	8,0-12,0 (6,0-14,0)	
	350	(18,0-26,0)	
End stop	230	min. 60	
	330	max. 60	

3. Dimensions

Designation	for assembly and adjustment mm
K	K1
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A XK	20,2-22,2
B XL	9,3-12,6

Observations
Manifold-pressure
compensator stroke
= 4,5 mm
Correction at the
adjusting nut. (46)

Pulling electro-
magnet 24 V

2.4 Solenoid	max. cut-in voltage xxx min 22,0 V
	xxxxxxx Nennspannung 24,0 V

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Test Specifications

Distributor-type

Fuel-injection Pumps

En

05.84

Test ISO 4113

VE 4/9 F 2400 R 138

Overflow temperature 45° C

 superseded by
 company: VWV
 engine: 086

0 460 494 131

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,9-3,3	mm	
1.2 Supply-pump pressure	1500	4,3-4,9	bar (kgf/cm ²)	
1.3 Full-load delivery with charge-air pressure	-		cm ³ /1000 strokes	
Full-load delivery without charge-air pressure	1500	32,7-33,7	cm ³ /1000 strokes	2,5 (3,0)
1.4 Idle regulation	475	6,0-10,0	cm ³ /1000 strokes	2,0 (3,0)
1.5 Full-speed regulation	2600	11,0-17,0	cm ³ /1000 strokes	
1.6 Start	100	min. 35	cm ³ /1000 strokes	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8	2400 6,4-7,0	
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)	2400 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (30,9-35,5) 21,7-24,7 (20,2-26,2)	
switch-off			
elektr.	400	0	
Idle stop	475 650 1200	max. 7,5 max. 5,0 min. 18,0	(4,0-12,0)
End stop	400 500	min. 18,0 max. 23,5	
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V test voltage xxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
* FH	1,8-2,4
A	
B	

Observations

 *operating
 stroke (KSB)

Test Specifications

Distributor-type

Fuel-injection Pumps

VE 4/9 F 2400 R 138-1

Overflow temperature 45° C

 supersedes 12.83
 company: VWV
 engine: 086

0 460 494 140

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/..

Test ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,9-3,3 mm		
1.2 Supply-pump pressure	1500	4,3-4,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	32,7-33,7 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	450	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 35 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,4-3,8)	2400 6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8		2400 6,4-7,0
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (30,9-35,5) 21,7-24,7 (20,2-26,2)	
switch-off mech. elektr.	2400 400	0 0	
Idle stop	450 650 1200	(4,0-12,0) max. 5,0 max. 7,0	
End stop	400 500	min. 18,0 max. 23,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	2,7
*FH	1,8-2,4
A	
B	

Observations

 *operating
stroke (KSB)

2.4 Solenoid	max. cut-in voltage xxx min. 10 V
	test voltage rated voltage 12V.

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

VE 6/10 F 2150 L 151

Overflow temperature 45° C

0 460 406 039

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2		
1.2 Supply-pump pressure	1500	5,5-6,1	mm	
1.3 Full-load delivery with charge-air pressure	-		bar (kgf/cm ²)	
Full-load delivery without charge-air pressure	1500	28,0-29,0	cm ³ /1000 strokes	max. 2,5
1.4 Idle regulation	375	6,0-10,0	cm ³ /1000 strokes	max. 2,0
1.5 Full-speed regulation	2400	9,0-15,0	cm ³ /1000 strokes	
1.6 Start	100	min. 35	cm ³ /1000 strokes	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,7-1,5 (0,4-1,8)	1500 (2,3-3,7)	2150 4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,0-3,6		2150 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2150 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600 2400 2150 1500 750	max. 3,0 (8,0-16,0) 24,0-26,0 (22,7-27,3) (26,3-30,7) 25,0-28,0 (23,5-29,5)	
switch-off elektr.	400	0	
Idle stop	375 450	(4,0-12,0) max. 3,0	
End stop	400 500	min. 20,0 max. 28,0	
2.4 Solenoid	max. cut-in voltage xxx min. 10 V test voltage rated voltage 12V.		

3. Dimensions

Designation	for assembly and adjustment mm
K	3,2-3,4
KF	6,4-6,7
MS	1,4-1,6
SVS	max. 2,6
*FH	1,8-2,4
A	
B	

Observations

 * *operating
stroke (KSB)

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 OPE 2,3 h

2. Edition

En

Testoil-ISO 4713

VE 4/10 F 2100 L 156

Overflow temperature 45° C

 superseded by 10.84
 company: Opel
 engine: 2,3 TD

D 460 404 037

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,1-5,5 mm	0,8	
1.2 Supply-pump pressure	1500	5,0-5,6 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1200	58,5-59,5 cm ³ /1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	500	36,0-37,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	290	13,5-17,5 cm ³ /1000 strokes	0	3,0
1.5 Full-speed regulation	2425	15,0-21,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 48,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1500		0	

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,5-2,3 (1,2-2,6)	1200 3,4-4,0 (3,0-4,4)	1500 (4,6-6,0)	2100 7,9-8,7 (7,6-9,0)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,7-3,3 (0 bar)	1200 4,4-5,0 (0,8 bar)	2100 6,4-7,0 (0,8 bar)	
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 55-138 (40-153)		2100 (0,8 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2425 2300 2100 1200 800* 500	max. 6,0 (13,5-22,5) 28,5-35,5 (27,5-36,5) 46,3-48,7 (44,8-50,1) (56,3-61,6) 43,5-44,5 (41,3-46,6) (33,1-39,9)	0,8 0,8 0,8 0,8 0,8 0,3 0
switch-off	2100		
Idle stop ...	380 320 290	max. 2,5 7,0-13,0 (5,5-14,5) (11,0-20,0)	
End stop	250 400	min. 50,0 max. 47,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 3,0
*FH	1,8-2,4

Observations

 Manifold-pressure
compensator stroke
= 6,2 mm
Correction at the
adjusting nut. (46)

 *operating
stroke (KSB)

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01.85

C17

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

E 3/11 F 1250 L 163-1

Overflow temperature 45° C

D 460 413 002

DHK: 1 688 901 020

 superseded by Fiat-Iveco
 company: 8035.06.200
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	2,8-3,2 mm		
1.2 Supply-pump pressure	1000	4,7-5,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1000	64,5-65,5 cm ³ /1000 strokes		3,5 (4,0)
1.4 Idle regulation	400	15,5-19,5 cm ³ /1000 strokes		3,5 (4,0)
1.5 Full-speed regulation	1400	6,5-13,5 cm ³ /1000 strokes		
1.6 Start	100	min. 80,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,1-1,9 (0,8-2,2)	1000 (2,3-3,7)	1250 4,4-5,2 (4,1-5,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,0-2,6		1250 5,8-6,4
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1250 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1450 1400 1350 1250 1000 500	max. 1,0 (5,5-14,5) 37,0-43,0 (35,5-44,5) 61,5-64,5 (60,3-65,7) (62,3-67,7) 53,5-56,5 (51,6-58,4)	
switch-off			
Idle stop	475 425 400	max. 1,0 min. 5,0 (13,0-22,0)	
End stop	150 250	min. 90,0 max. 50,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,3
MS	1,5-1,7
SVS	4,3
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V xxx rated voltage 12V.
--------------	-------------------------------------	---

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VMA 2,2 d
1. Edition

En

Test ISO 4113

VE 4/10 F 2100 L 168-1
0460 404 042

Overflow temperature 45° C

supersedes Motori VM
company HR 492 HJ
engine

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge air press bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1 500	4,6- 5,0 mm	0,8	
1.2 Supply pump pressure	1 500	4,8- 5,4 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1 500	58,7-59,7 cm ³ /1000 strokes	0,8	3,0
Full-load delivery without charge-air pressure	600	38,8-39,8 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	13,0-17,0 cm ³ /1000 strokes	0	3,0
1.5 Full-speed regulation	2 300	27,0-33,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	40-60 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1 500		0	

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	1 000 1,6-2,4 (1,3-2,7)	1 500 (4,1-5,5)	2 100 7,6-8,4 (7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	400 1,1-1,7	2 100 6,9-7,5	
Overflow delivery	n = rev/min cm ³ /10 s		2 100 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2 450	1,5- 8,5 (0,5- 9,5)	0,8
	2 300	(25,5-34,5)	0,8
	2 100	49,5-52,5 (46,5-55,5)	0,8
	1 500	(56,5-61,9)	0,8
	700*	50,3-51,3 (48,1-53,5)	0,4
	600	(36,6-42,0)	0
	600	61,2-64,2 (59,3-66,1)	0,8
switch-off			
Idle stop	400	(10,5-19,5)	
	450	2,5- 8,5 (1,0-10,0)	
	600	max. 2,0	
End stop	400	43 -63	
	500	max. 44	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,5
MS	0,7-0,9
SVS	
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 6,1 mm

2.4 Solenoid	max. cut-in voltage test voltage	XXX min. 10 V rated voltage 12V.
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BOSCH

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01.85

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 CUM 5,9 L
1. Edition

En

Testoil ISO 4113

VE 6/12 F 1050 R 173-3 Overflow temperature 45° C
0460 426 058
DHK: 1688 901 016 / 207 + 3 bar

supersees Cummins
company: 6 BTA 59
engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	900	2,0- 2,4 mm	0,75	
1.2 Supply-pump pressure	900	4,1- 4,7 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	750	91,0-92,0 cm ³ /1000 strokes	0,75	
Full-load delivery without charge-air pressure	500	66,0-67,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	18,0-24,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	1 100	53,0-61,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 97 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	750	900	1 050
LDA=0,75 bar	mm	1,3-2,1 (1,0-2,4)	(1,5-2,9)	2,6-3,4 (2,3-3,7)
2.2 Supply pump	n = rev/min	200	750	1 050
LDA=0,75 bar	bar (kgf/cm ²)	1,1-1,7	3,6-4,2	4,8-5,4
Overflow delivery	n = rev/min	500	1 050	
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1 150	max. 15	0,75
	1 100	(52,0- 62,0)	0,75
	1 050	78,5-81,5 (77,0- 83,0)	0,75
	900	85,5-88,5 (84,0- 90,0)	0,75
	750	(88,5-94,5)	0,75
	600*	82,5- 83,5 (80,0- 86,0)	0,40
	500	102,0-106,0 (100,6-107,7)	0,75
	500	(63,5- 69,5)	0
switch-off			
elektr.	375	0	
Idle stop	300	49,0- 57,0 (48,0- 58,0)	
	375	(16,0- 26,0)	
End stop	450	max. 1,5	
	130	min. 85	
	230	max. 85	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,5
MS	1,4-1,6
SVS	2,4
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 6,2 mm

2.4 Solenoid	max. cut-in voltage XXX min. 10 V rated voltage 12V.
--------------	---

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Test Specifications Distributor-type Fuel-injection Pumps

En

Testoil-ISO 4113

VE 4/9 F 2250 R 174

0 460 494 154

DHK: 1 6 88 901 022 / 130+ 3 bar

Test pressure line

6x2x450/1 680 750 073

Overflow temperature 45° C

 superseded by PSA-Mahindra
 company: XD 4/90
 engine:

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,8-4,2 mm		
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	31,0-32,0 cm ³ /1000 strokes		2,5
1.4 Idle regulation	350	7,0-11,0 cm ³ /1000 strokes		2,0
1.5 Full-speed regulation	2400	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 50 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,6-2,4 (1,3-2,7)	1500 (3,3-4,7)	2200 6,4-7,2 (6,1-7,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,0-2,6	2200 7,4-8,0	
Overflow delivery	n = rev/min cm ³ /10 s		2250 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2400 2350 2200 2000 1500 1000 500	max. 4,0 (10,0-18,0) 21,0-27,0 (20,0-28,0) 34,0-37,0 (32,8-38,2) 33,5-36,5 (32,3-37,7) (28,8-34,2) 29,7-32,7 (28,2-34,2) 30,0-33,0 (28,5-34,5)	
switch-off			
Idle stop	350 400 550	(5,0-13,0) max. 4,0 max. 1,0	
End stop	350 450	min. 40 min. 44	
2.4 Solenoid	max. cut-in voltage xxxxx min. 10 V test voltage xxxxx rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	mm
K	3,2-3,4
KF	5,7-6,0
MS	1,2-1,4
SVS	2,5
A	
B	

Observations

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Testoil-ISO 4113

VE 4/9 F 2125 R 180-1

Overflow temperature 45° C

0460 494 159

DHK: 1688 901 022/130 + 3 bar

Test pressure line
6x2x450/1 680 750 073

superseded

company ISA-Peugeot

engine: XD 3T-US

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,3-5,7 mm	0,8	
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0 cm ³ /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	42,0-43,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	430	7,0-11,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2350	31,0-37,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 65 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1500	-	0,8	

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	750	1500	2000
LDA=0,8 bar	mm	0,9-1,7 (0,6-2,0)	(4,8-6,2)	7,9-8,7 (7,6-9,0)
2.2 Supply pump	n = rev/min	200	750	2000
LDA=0,8 bar	bar (kgf/cm ²)	1,1-1,7	3,1-3,7	6,6-7,2
Overflow delivery	n = rev/min	500 (0 bar)	2125 (0,8 bar)	
	cm ³ /10 s	55-138 (40-153)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650	max. 3,0	
	2350	(30,0-38,0)	0,8
	2250	42,0-50,0 (42,0-50,0)	0,8
	2000	53,5-56,5 (52,4-57,6)	0,8
	1500	(54,9-60,1)	0,8
	1000	54,0-57,0 (52,5-58,5)	0,8
	750*	49,0-50,0 (46,9-52,1)	0,3
	500	(39,9-45,1)	0
switch-off			
Idle stop	430	(5,0-13,0)	
	530	max. 3,0	
End stop	260	min. 60	
	360	max. 60	
2.4 Solenoid	max. cut-in voltage	xxxx 10 V	
	rated voltage	xxxx rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,5
MS	1,2-1,4
SVS	4,6
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 7.5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

46
WPP 001/4 VWW 1,6 W 10
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2400 R 185
0 460 494 161

Overflow temperature 45° C

supersedes
company:
engine:

VW
086 - 1,6 Lit
Jetta/Rabbit-USA

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,4-2,8 mm		
1.2 Supply-pump pressure	1250	3,7-4,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	31,5-32,5 cm ³ /1000 strokes		max. 2,5
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 35 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1250			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 0,8-1,6 (0,5-1,9)	1250 (1,9-3,3)	2400 7,4-8,2 (7,1-8,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8		2400 6,4-7,0
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,0-29,0 (25,4-30,6) (29,4-34,6) 20,5-23,5 (19,0-25,0)	
switch-off elektr.	400	0	
Idle stop	475 650 1200 400 500	(4,0-12,0) max. 6,5 max. 5,0 min. 17 max. 22,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,7
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage test voltage xxx min. 10 V xxxxxxx rated voltage 12V.
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Test Specifications Distributor-type Fuel-injection Pumps

46
WPP 001/4 VW 1,6 W 9
1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 186

0 460 494 162

Overflow temperature 45° C

supersedes
company VW
engine: 086 T - 1,6 Lit

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,9-3,3 mm	0,75	
1.2 Supply-pump pressure	1250	4,0-4,6 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	22,5-23,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes	0	max. 2,5
1.5 Full-speed regulation	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 35 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1250		0	

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1000	1250	2250
LDA=0,75 bar	mm	1,8-2,6 (1,5-2,9)	(2,4-3,8)	6,1-6,9 (5,8-7,2)
2.2 Supply pump	n = rev/min	600	2250	
LDA=0,75 bar	bar (kgf/cm ²)	2,5-3,1	6,5-7,1	
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 55-138 (40-153)	2250 (0,75 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750 2525 2250 1500 1000* 600	max. 3,0 38,0-40,0 33,0-34,0	0,75 0,75 0,75 0,75 0,30 0
switch-off			
elektr.	400	0	
Idle stop	475 1250 400 500	max. 4,0 min. 21 max. 29	
2.4 Solenoid	max. cut-in voltage test voltage	xxxx min. 10 V rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	3,2-3,4
MS	5,7-6,0
SVS	1,2-1,4
	3,7
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,5 mm

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 s 8

1. Edition

En

PES 6 A 90 D 410 RS 2293
Komb.-Nr. 0 400 876 265

RSV 350-1400 AOC 2002 L

supersedes
company Daimler-Benz
engine OM 352
95,6 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,0+0,1	6,2-6,3	0,3(0,45)			
350	7,1-7,3	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 31	350	6,7	-	-
ca. 63 2a		x = 4,0					100	min. 19,0		
							350	7,1-7,3		
		9,0 1420-1430					560-620	= 2,0		
		4,0 1505-1535					700	max. 1,0		
		1600 0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1380	61,5-62,5	1420-1430*	-	-	100	14,2-14,8 mm RW	350	7,2	
					1517	3,6-4,6 mm RW			

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 11

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1100 AOC 2002-1 L

Komb.-Nr. 0 400 876 329

supersedes

company Daimler-Benz
OM 352
engine 70 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Test oil ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1090	9,1-9,2	4,8-4,9	0,3 (0,45)			
350	7,2-7,4	0,8-1,4	0,25 (0,45)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control lever deflection in degrees rev/min 8			3 Torque control rev/min 10	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	Control rod travel mm 9			Control rod travel mm 11	
lose	800 0,3-1,0		-	-	-	ca. 30	350 7,3		1090 9,1-9,2	
	X =						100 min. 19,5		800 10,2-10,3	
							350 7,2-7,4		975 9,6-9,8	
ca. 52	8,1 1130-1140						550-610 = 2,0			
2a	4,0 1190-1220									
	1300 0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery 5 Idle rev/min 6		4a Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
1090	48,0-49,0 (46,0-51,0)	1130-1140*	800	53,0-55,0 (50,5-57,5)		100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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D2

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 s 9

1. Edition

En

PES 6 A 90 D 410 RS 2293

RSV 350-1400 AOC 2053 L

Komb.-Nr. 0 400 876 280

supersedes

company Daimler-Benz

engine OM 352

82 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	9,0-9,1	5,1-5,2	0,3(0,45)			
350	7,4-7,6	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees 7			③ Torque control rev/min 10		Control rod travel mm 11
lose	800	0,3-1,7	-	-	-	ca. 29	350	7,0	1380	9,0-9,1	
	X =						100	min. 19,0	1100	9,4-9,6	
							350	7,4-7,6	500	9,9-10,0	
							530-590	= 2,0			
ca. 61	8,0	1420-1430					700	max. 1,0			
②a	3,4	1455-1485									
	1600	0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to . . . rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		⑤ Idle stop rev/min 8		Control rod travel mm 9
1380	51,0-52,0 (49,0-54,0)	1420-1430*	1000	55,5-58,5 (53,5-60,5)	600	100	73,0-83,0 (70,0-86,0) = 14,0-14,6 mm RW	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 q 7

2. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 350-1300 A O B 1101 DL

1101-2L

Komb.-Nr. 0 400 876 257

A O C 1101-2L

supersede 3.84

company Daimler-Benz

engine OM 352

70 kW (95 PS)

Unimog

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25 mm (from BDC)
(2,10-2,30)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1300	8,2-8,3	4,5 - 4,6	0,3(0,45)			
350	6,6-6,8	0,8 - 1,4	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-		350	6,7	1300	8,2-8,3
	x = 5,0								500	9,6-9,7
ca. 64	7,2	1340-1350					100	min. 19,0	700	9,3-9,5
	4,0	1395-1425					350	6,6-6,8	1100	8,5-8,8
2a	1500	0,3-1,7					450-510	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1300	44,5-45,5 (42,5-47,5)	1340-1350*	500	42,0-45,0 (40,0-47,0)	100	78,0-88,0 (75,0-91,0)	-	-	

Checking values in brackets

* 1 mm less control rod travel than col 2

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2.85

Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 3,8 g 2

5. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2294

RQV 300-1425 AB 740 L

Komb.-Nr. 0 400 844 047

supercharged 83

company Daimler-Benz

engine OM 314

62,5 kW (85 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,1-2,3)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	9,7-9,8	6,3 - 6,4	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1420	15,2-17,8	-	-	-	ca. 14	100	min. 9,1	250	0,7-1,0
ca. 59	8,7 4,0 1700	1455-1465 1550-1580 0 - 1,0					300	7,5-7,7	640	3,2-3,6
									1030	5,5-5,7
									1425	8,1
							370-520			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	62,5 - 63,5 (60,5 - 65,5)	1455-1465 *	-	-	100	71,0-81,0 (68,0-84,0) = 13,7-14,3 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,8 m

6. Edition

En

PES 4 A 90 D 410 RS 2294

RSV 350-750 A O B 764 L

..A O C 764 L

RSV 350-900A O B 764 L

superseded 9.82

company: Daimler-Benz

engine: OM 314

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,15-2,25}
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	9,4-9,5	4,7- 4,8	0,3(0,45)			
350	6,7-6,9	0,5-1,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

350-750

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 23	350	6,3	-	-
	x =	3,75					350	6,2-6,4		
ca. 35 ⑤	8,4 4,0 820	750-755 788-801 0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	47,0- 48,0 (45,0-50,0)	750-755 *		-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

B. Governor Settings

350-900

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 33	750 830 870	16,0 9,0 4,5	without auxiliary spring			ca. 20	350	7,0	-	-
ca. 35	895 - 905 = 8,3 930 - 945 = 3,8 1000 0,3 - 1,7						100 min. 19 350 6,7-7,3 370-430 = 2,0 450 0 - 1			
②a			with auxiliary spring							

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery		⑤ Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)				Idle			
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
850	49,5-50,5 (47,5-52,5)	895-905*				100	14,7-15,3 mm RW	350	7,0

Checking values in brackets

* 1 mm less control rod travel than col 2

**| Set idle-speed auxiliary spring at 2 mm control-rod travel.

D. Adjustment Test for Manifold Pressure CompensatorTest at n = decreasing increasing rev/min pressure - in bar gauge pressure

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

Test Specifications Fuel Injection Pumps **(1A)** and Governors

40

WPP 001/4 KHD 6,1 a
6. Edition

En

PES 6 A 85 D 410/3 RS 2366 RSV 325-1400 A8B 674D, 707D supersedes 4.84
.. RS 2415 A8C 674D company KHD
.. RS 2532 325-1150 A8B 674D, 707D engine BF 6 L 913

Note page 3

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(1,9-2,0)$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	12,4+0,1	8,4-8,5	0,3(0,45)			
325	6,6-6,8	0,9-1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

RSV 325-1400 A 8 B 674 D, 707 D

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,7-1,0	-	-	-	ca. 21	325	6,2	500	13,7-13,8
	x =						100	min.19,0	1000	13,3-13,5
							325	6,6-6,8	1400	12,4-12,5
							585-645	= 2,0		
ca. 71	11,4	1440-1450					700	max.1,0		
2a	4,0	1485-1515								
	1620	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA	0,7 bar			LDA	0,7 bar	100	17,6-18,2	325	6,7
Note	page 3			Note	page 3		mm RW		
		Note page 3		LDA	0 bar				
				500	60,0-63,0				
					(58,0-65,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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D8

B. Governor Settings

EP/RSV 325-1150 A8B674D, 707 D

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control-lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
ca. 56	1150	16,0	without auxiliary spring			ca. 21	325	5,5	1130	0
	1200	11,1					200	19 - 21		
	1250	5,4					325	5,5-5,8		
②a	1220	7,5-10,4	with auxiliary spring				500	1,4-3,4	500	1,0-1,2
	1300	1,3-3,6					660	0 -1,5		
	1380	0,3-1,5								

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm³/1000 strokes	rev/min		rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,7 bar	s.S.3		LDA	0,7 bar	100	119,5-129,5; 325		5,5**
Instructions P.3				s. Seite 3					
				LDA 0 bar					
				500	57,5-59,5				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXXXX

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution XXXXXXX XXX
all governors	0,38	0,10	0,2 - 0,3 1,6 - 2,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

En

C. Settings for Fuel Injection Pump with Fitted Governor

- 3 -

engine power Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery idle switching point		Intermediate rotational speed Torque-control travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min mm
1	2	3	4	5	6	7	8

BF 6 L 913 - PES 6 A D..RS2366, 2415

-F- oder B-Leistung bei .. min⁻¹

1400	88,0 - 90,0	1420	800	80,0 - 83,0	160 PS	/	n = 2800
1400	84,0 - 86,0	1420	800	66,0 - 69,0	142 PS	/	n = 2800
1325	90,5 - 92,5	1340	850	88,5 - 90,5	168 PS	/	n = 2650
1325	87,5 - 89,5	1340	800	82,5 - 85,5	160 PS	/	n = 2650
1325	82,5 - 84,5	1340	800	67,5 - 70,5	140 PS	/	n = 2650
1250	87,0 - 89,0	1270	800	84,5 - 87,5	160 PS	/	n = 2500
1250	83,0 - 85,0	1270	800	77,5 - 80,5	148 PS	/	n = 2500
1250	81,0 - 83,0	1270	800	75,5 - 77,5	140 PS	/	n = 2500
1200	86,0 - 88,0	1220	800	84,5 - 87,5	156 PS	/	n = 2400
1200	78,0 - 80,0	1220	800	68,0 - 71,0	135 PS	/	n = 2400
1165	84,0 - 86,0	1180	800	84,5 - 87,5	152 PS	/	n = 2330
1150	83,5 - 85,5	1165	800	84,5 - 87,5	152 PS	/	n = 2300
1150	80,0 - 82,0	1165	800	79,0 - 81,0	142 PS	/	n = 2300
1100	82,0 - 84,0	1115	800	84,5 - 87,5	147 PS	/	n = 2200
1075	82,0 - 84,0	1090	800	84,5 - 87,5	144 PS	/	n = 2150
1075	78,0 - 80,0	1090	800	76,0 - 79,0	136 PS	/	n = 2150
1050	76,5 - 78,5	1065	800	73,5 - 76,5	130 PS	/	n = 2100
1000	82,5 - 84,5	1015	800	84,5 - 87,5	137 PS	/	n = 2000
1000	77,0 - 79,0	1015	800	79,5 - 82,5	130 PS	/	n = 2000
900	82,0 - 84,0	910	800	84,5 - 87,5	125 PS	/	n = 1800
875	68,0 - 70,0	885	800	66,0 - 69,0	106 PS	/	n = 1750
750	85,0 - 87,0	760	-	-	105 PS	/	n = 1500
750	78,0 - 80,0	760	-	-	100 PS	/	n = 1500

PLEASE NOTE

1. ** With Liebherr excavators: single-lever control, therefore use shorter screw 1 423 400 031 and set this at 0.3 - 1.0 before the stop.
2. LDA adjustment to be carried out according to VDT-W-420/305.
3. Dimension H = 22.5 mm = basic setting of LDA.

Checking values in brackets

* 1 mm less control rod travel than col 2

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 19,0 g 1

1. Edition

En

PE 12 A 95 D 610 LS 2449
Komb.Nr. 0 400 640 111

RQV 300-1200 AB 1105-1 L

supersedes -

company: KHD

engine: BF 12 L 413 F
326 kW

1- 4- 9- 8- 5 - 2 - 11- 10- 3 - 6 - 7 - 12
0-15-60-75-120-135-180-195-240-255-300-315° ± 0,5° (±0,75°)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke		1,8-1,9 (1,75-1,95)		mm (from BDC)		
Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (torque-control valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1200	11,0+0,1	10,9 - 11,1	0,35(0,6)			
300	6,4-6,6	1,1-1,7	0,35(0,55)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	Degree of deflection of control lever	rev/min	Control rod travel	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1250	15,2-17,8	-	-	-	ca. 14	100	min. 8,0	250	0,6-0,9
ca. 67	10,0	1240-1250					300	6,4-6,6	650	1,2-4,4
	4,5	1300-1330							1000	5,3-6,5
	1450	0 - 1,0				315-410			1275	9,0
						③a				

Torque control travel a = 0,35 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery		Rotational speed		Fuel delivery characteristics		Starting fuel delivery		Torque-control travel	
Control-rod stop		limitation		high idle speed		idle switching point			
Test oil temp. 40°C (104°F)		intermediate speed							
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA	0,7 bar	1240-1250 *	LDA	0,7 bar	100	26,5-136,5	200	1,0+0,1	
1200	109,0-111,0		800	109,5-112,5		123,5-139,5)	500	1,3+0,1	
	(107,0-113,0)			(107,0-115,0)			915	1,2+0,2	
			LDA	0 bar			1045	1,0+0,3	
			500	84,5-87,5					
				(82,5-89,5)					

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

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241

D11

D. Adjustment Test for Manifold Pressure Compensator

KHD 19,0 g 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 12A..LS 2449 + RQV.. AB 1105-1L	0,70	0 0,32 0,22	11,2-11,3 10,4-10,5 10,9-11,0 10,5-10,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WHP 001/4 MAN 9,2 f 1
1. Edition

En

PES 5 A 95 D 320 LS 2504
Korb.-Nr. 0 400 845 079

RQ 250/1100 AB 1197 R

supersedes
company MAN

engine: D 2565 MUL
141 KW

1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $(1,45-1,65)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 100	11,3+0,1	11,4-11,6	0,3(0,6)			
250	6,4-6,6	1,5-2,1	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9		Torque control Control rod travel mm 12	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 10		rev/min 11
600	15,6-16,4	600	16,0	10,3	1145-1160	250	6,5	100	min. 8,0	100	11,3-11,4
				4,0	1195-1225			250	6,4-6,6	600	11,7-11,8
				1300	0-1,0			370	410=2,0	940	11,5-11,7
										015	11,4-11,6

Torque-control travel
on flyweight assembly dimension a = 0,40 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery idle speed rev/min 6	
	cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes/mm 7
1100	114,0-116,0 (112,0-118,0)	-		800	111,0-115,0 (109,0-117,0)	100	147,0-157,0 (144,0-160,0)
				500	108,5-112,5 (106,5-114,5)		= 13,7-14,3 mm RW
						250	6,5 mm RW

Checking values in brackets

2.85

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPD 001/4 OMB 4,6 b

1. Edition

En

Testoil-ISO 4113

PES 4 A 90 D 410 RS 2518

R0 300/1400 AB 989 DL

Komb.-Nr. 0 400 844 073

supersedes

 company: OM Brescia
 engine: 8340.04.200

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

^{2,15-2,25}
 (2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	10,8+0,1	7,0 - 7,1	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
		①						⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
1000	14,2-15,8	1000	15,0	9,8	1445-1460	300	6,0	100	min. 7,5	1400	10,8-10,9
				4,0	1540-1570			300	5,9-6,1	740	10,8-11,0
					1750			450	490 = 2,0	600	11,0-11,2
								600	max. 1,0		

Torque-control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation: At 1445-1460 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
		②		③a		③b	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1400	69,5 - 70,5 (67,5 - 72,5)	500		900	64,5 - 67,5 (62,5 - 69,5)	100	117,0-123,0 (114,0-126,0)
				600	61,5 - 64,5 (59,0 - 67,0)		= 16,2-16,6 mm RW

Checking values in brackets

3.85

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 5,7 n 5

4. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2520 RQV 300 - 1425 AB 982 DL
Komb.-Nr. 0 400 846 401

supersedes 1.82
company Daimler Benz
engine OM 352 A
127 kW (172 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,80-1,90}{(1,75-1,95)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1400	11,5+0,1	7,9 - 8,0	0,3(0,45)			
300	7,5-7,7	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1425	16,0-19,4	-	-	-	ca. 10	100	min. 7,4	400	1,4-2,2
ca. 61	10,5	1440-1450					300	5,8-6,0	1425	8,1
	4,0	1560-1590					570-630	= 2,0		
	1700	0 - 1,0					800	max. 1,0		
						350-500				
						③a				

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 1400	0,5 bar 79,0 - 80,0 (77,0 - 82,0)	1440-1450*	LDA 600	0,5 bar 76,0 - 78,0 (74,0 - 80,0)	100	71,0-81,0 (68,0-84,0) = 14,0-14,6 mm RW	1400	11,5
800	82,0 - 84,0 (80,0 - 86,0)		LDA 500	0 bar 62,0 - 65,0 (60,0 - 67,0)			1200	11,8
							1000	12,1
							600	12,6
								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

D15

D15

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D. Adjustment Test for Manifold Pressure Compensator

Test at n =

800

 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXXXX

Pump/governor	Setting	Measurement	Control rod travel diminution difference XXXXXXX (1) XXX
	Gauge pressure = bar	Gauge pressure = bar	mm
2520 + 982 DL	0,50	0,13 0,11 0	12,5 - 12,6 12,2 - 12,3 11,7 - 11,9 11,5 - 11,6

Notes

(1) when n =

 rev/min and
 gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors (1A)

40

WPP 001/4 KHD 4,1 c 1

2. Edition

En

PES 4 A 80 D 410/3 RS 2523
Komb.-Nr. 0 400 864 044

RSV 325-1400 A 8 B 540DL
A 8 C 540 L

superseded 5.84
KHD
company F 4 L 912
engine Einbau 2800

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 1,9 - 2,0 \\ (1,85 - 2,05) \end{matrix}$ mm (from BDC)

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1380	10,2+0,1	5,7-5,8	0,2(0,35)			
325	8,0-8,2	0,9-1,5	0,2(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 19	325	7,6	1380	10,2-10,3
		x=					100	min. 19,5	900	10,8-11,1
ca. 67	9,2	1420-1430					325	8,0-8,2	500	11,4-11,5
②a	4,0	1450-1480					670 - 780	=2,0		
	1600	0,3 - 1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp 40°C (104°F)		Note changed to ... rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1380	57,0-58,0 (55,5-59,5)	1420-1430*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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D17

247

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 KHD 4,1 c 4

En 1. Edition

PES 4 A 80 D 410/3 RS 2523

RSV 325-1400 A 8 C 1022 L

supersedes -

Komb.-Nr. 0 400 864 046

company KHD

engine F 4 L 912

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,2+0,1	5,7-5,8	0,2 (0,35)			
325	8,0-8,2	1,0-1,6	0,2 (0,3)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever i	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 20	325	5,0	1400	10,2-10,3
	x = 3,5						100	min.19,0	900	10,8-11,1
							325	5,4-5,6	500	11,4-11,5
ca. 67	9,2	1440-1450					500-560	= 2,0		
②a	4,0	1470-1500								
	1600	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to: rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	7	8	9	
1400	57,0-58,0 (55,5-59,5)	1440-1450*	-	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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D18

249

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 DAF 8,3 i 1

6. Edition

En

PE 6 A 90 D 410 RS 2524 RSV 250-1200 A 5 B 2012 L
Komb.-Nr. 0 400 676 151

Specifications apply to test tubing 1 680 750 015

supersedes 6.83
company DAF
engine DH 825

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,25-2,45) mm (from BDC) RW = 7,5-10,5 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,4-9,5	7,1-7,2	0,3 (0,45)			
250	6,5-6,7	0,9-1,5	0,2 (0,4)			

Port closing difference between control-rod travel 9 mm and max. = 4,5-5,5° camshaft

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel rev/min mm	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 16	250	5,5	1000	9,4-9,5
	x = 3,0						250	5,9-6,1	400	9,4-9,6
							580-640	= 2,0	300	9,7-10,2
ca. 49	8,4	1240-1250								
2a	4,0	1260-1290								
	1480	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F)		6 Rotational-speed limit Note: changed to .) rev/min		3a Fuel delivery characteristics		Starting fuel delivery 5 Idle		4a Idle stop	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1000	71,0-72,0 (69,0-74,0)	1240-1250*	-	-	-	100	128,0-138,0 (125,0-141,0)	250	6,6

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 DAF 8,3 k 1

5. Edition

En

Testoil-ISO 4113

PE 6 A 95 D 410 RS 2525, X, Y RSV 250-1200 A 5 B 2013 DL

supersedes 5.84

See Service Information VDT-I-420/115

company: DAF

engine: DN825 (X, Y)
DHP/DHTD 825

Specifications apply to test tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke (1,95-2,15) mm (from BDC)
 2,00-2,10 RH 9

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1000	12,6+0,1	10,9 - 11,1	0,35(0,6)			
250	6,0-6,2	0,7 - 1,1	0,35(0,55)			
Port closing difference between control rod travel 9 mm and max. = 3 - 4° camshaft						

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0	-	-	-	ca. 21	250	5,6	1000	12,6+0,1
	X	4,25							400	12,8+0,2
							250	6,0-6,2	300	13,0+0,5
⑤ ca. 55	1230-1240	11,6					595-655	2,0		
	1330-1360	4,0								
	1490	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	
LDA 1000	0,7 bar 108,5-110,5 (106,5-112,5)	1230-1240*	LDA 600	0 bar 84,5 - 87,5 (82,0-90,0)	100	120,0-130,0 (117,0-133,0) = 19,5-21,0 mm RW	-	-	
X 1000	90,5- 92,5	(12,0mmRH)	X 600	77,0 - 80,0					
Y 1000	99,0-101,0	(12,5mmRH)	Y 600	77,0 - 80,0					

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

D. Adjustment Test for Manifold Pressure Compensator

DAF 8,3 k 1 - 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
2525 + 2013 DL	0,70	0,30 0,26 0	12,6 - 12,7 12,3 - 12,4 11,7 - 11,9 11,5 - 11,6

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 9,2 i 2

2. Edition
tropicalized version

En

Testoil-ISO 4113

 PES 5 A 95 D 410 LS 2543 RQ 250/1100 AB 1039 DL
 Komb.-Nr. 0 400 845 044

 1 - 3 - 5 - 4 - 2
 0 -72 -144-216-288° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes 3 62

company: MAN

engine: D2565 M/MF

141 kW (192 PS)(1)

MAN-Nr. 1-7933

D 2565 MF-Tropen₁134 kW/1500 min⁻¹

(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,45-1,65)

mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,1 - 11,2	0,3(0,6)			
250	5,9-6,1	1,4 - 1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	6,0	100 min. 7,5 250 5,9-6,1 280-440 = 2,0 500 0 - 1		1100	11,0+0,1
1300	0 - 1,0			4,0	1185-1215					965	11,1+0,3
										790	11,5+0,2
										550	11,8+0,2

Torque-control travel
on flyweight assembly dimension a =

0,4

mm

Speed regulation: At

1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100 (1)	111,0 - 112,0 (109,5 - 114,5)		750	106,5 - 110,5 (104,5 - 112,5)	100	150 - 160 bei 15,7 - 16,3 mm RW
			500	max. 111,5 (113,5)	250	6,0 mm RW

Checking values in brackets

B. Governor Settings

(2)

MAN 9,2 i 2

- 2

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,0 4,0 1300	1145-1160 1185-1215 0-1,0	250	6,0	100 250 280-440 500	min.7,5 5,9-6,1 =2,0 0-1,0	1100 965 790 550	11,0+0,1 11,1+0,3 11,5+0,2 11,8+0,2

Torque control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7
1100 (2)	108,0-110,0 (107,5-110,5)	-		750 500	104,0-108,0 (102,0-110,0) 103,0-109,0 (102,0-110,0)	100 250	150,0-160,0 = 15,7-16,3 mm RW 6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12

Torque control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3		4	5	6	7

En Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

MPP 001/4 VOB 7,0 a

2. Edition

En

PE 6 P 100 A 320 RS 256 RQV 250-1200 PA 212/2 R

supersedes 74
compares Volvo-BM
engine: D 70 B

Note sleeve position 36.0 mm

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,8-2,9
(2,75-2,95)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12	12,3-13,1	0,5			
600	9	5,2-6,2				
	12	11,1-12,4				
	15	16,6-18,2				
200	9	3,2-4,2				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1290	15,0-18,3	-	-	-	ca. 23	120	8,3-10,0	1290	8,2
	1560	0					250	6,2-8,2		
ca. 66	1200	15,1-18,2					350	3,3-5,4		
	1300	8,0-13,1					500	0 - 2,5		
	1400	0 - 7,3					570	0		
	1520	0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
700	73,0-75,0	1230-1240*	-	-	100	230,0-270,0	-	-
					225	10,0-16,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3. 85

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Test Specifications Fuel Injection Pumps ② and Governors

WPP 001/4 MAN 9,2 i 3

3. Edition
tropicalized version

En

PES 5 A 95 D 410 LS 2543 RQ 250/1100AB 1137-3 L

supersedes 7.04

company: MAN

Komb.-Nr. 0 400 845 065

engine: D 2565 MF (1)
141 kW/2200 min⁻¹
MAN-Nr. 2-7435

1 - 3 - 5 - 4 - 2 je 72° ± 0,5° (± 0,75°)

D 2565 MF-Tropen,
134 kW/1500 min⁻¹
(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (1,45-1,65) mm (from BDC) Zyl. 5

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,2-11,3	0,3(0,6)			
250	6,9-7,1	1,4-1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider FRG check ①		Full-load speed regulation Setting point ④				Idle speed regulation Setting point ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,0 4,0	1145-1160 1185-1215	250	6,0	100 250 355	min. 7,5 5,9-6,1 395=2,0	100 600 790 955	11,0-11,1 11,8-11,9 11,6-11,8 11,1-11,4

Torque-control travel
on flyweight assembly dimension a = 0,4 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1100	111,5-112,5 (109,5-114,5)	-	750 500	106,5-110,5 (104,5-112,5) max. 111,5 (max. 113,5)	100 250	150,0-160,0 (147,0-163,0) =15,7-16,3 mm RW 6,0 mm RW

Checking values in brackets

1.85

B. Governor Settings

(2)

MAN 9,2 i 3

- 2 - ②

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
PRG check		Setting point	Test specifications		Setting point	Test specifications		Control rod			
rev/min	Control rod travel mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	rev/min	Control rod travel mm	
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	6,0	100	min.7,5	1100	11,0+0,1
				4,0	1185-1215			250	5,9-6,1	600	11,1+0,3
				1300	0-1,0			280-440	=2,0	790	11,6+0,2
								500	0-1,0	955	11,1+0,3

**Torque-control travel
on flyweight assembly dimension a**

www

Speed regulation At

1145-1160 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	Control rod travel
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes/mm
1	2	3	4	5	6	7
1100 (2)	108,0-110,0 (107,5-110,5)	-	750	104,0-108,0 (102,0-110,0)	100	150,0-160,0 = 15,7-16,3 mm RW
			500	103,0-109,0 (102,0-110,0)	250	6,0 mm RW

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

[illegible]

**Torque-control travel
on flyweight assembly dimension a =**

מה

Speed regulation At

**1 mm less control
rod travel**

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	Control rod travel
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7

En Checking values in brackets

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 M 50 C 320 RS 103

RSF 375/2250 M 19

Komb.-Nr. 0 400 074 978

Sales model

0 400 074 977

superseded 1.84

company Daimler-Benz

engine OM 615

44 kW (60 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

170-180
(1,65-1,85)

mm (from BDC)

18,5-21,5 Control rod travel

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	12,2 ^{+0,1}	3,2-3,3	0,25 (0,3)			
375	6,4-6,6	0,65-0,75	0,1 (0,15)			
1800			0,25 (0,3)			
2200			0,25 (0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
13-17	min. 12,0 max. 11,5	250			2200		100	min. 20,1
①		300	50	⑦	11,3-11,5		1800	11,7-11,9
②	6,4-6,6	375		⑧	6,7-7,1		1000	12,2-12,3
③	**	400		⑨	-			
④	-	-		⑩	0-1,0			
⑤	2,0	720-820		⑪			⑥	Switching point

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference
Test oil temp. 40°C (104°F)					Idle		
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	33,0-35,0 (33,0-36,0)	2500* RW 6,7-7,1	1800	33,0-35,0 (32,0-36,0)	100	min. 53,0	6,0
			1000	32,0-33,0 (31,0-35,0)	375	6,5-7,5 (5,5-9,0)	1,0
					2500	13,0-17,0 (12,0-18,0)	2,5 siehe 8a

Checking values in brackets

Ca. 3,5 mm less control rod travel than in Column 2

1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1.4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,0 h

3. Edition

En

PES 4 M 50 C 320 RS 103

RSF 375/2250 M 20

Komb.-Nr. 0 400 074 976

Sales model

1-3-4-2=0 - 90-180-270 $\pm 0,5$ (0,75°)

0 400 074 975

supersedes 12.82

company Daimler-Benz

engine OM 615

42,7 kW (58 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,70-1,80$
(1,65-1,85) mm (from BDC) 20 mm Control rod travel

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	11,4+0,1	2,95-3,05	0,25(0,3)			
375	6,4-6,6	0,65-0,75	0,10(0,15)			

Se. uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
13-17	min. 12,0	250	50	10,7-10,9	2200		100	min. 20,1
(1)	6,4-6,6	375	(7)	7,6-8,0	2500	(12)	1900	10,9-11,1
(2)	**	400	(8)	-	-	(13)	1000	11,4-11,5
(3)	-	-	(9)	0,0-1,0	2950	(14)		
(4)	2,0	720-820	(10)	-	-	(6)	Switching point	
(5)			(11)					

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery (18)		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	31,5-33,5 (30,5-34,5)	2500* RW 7,6-8,0	1900	32,0-34,0 (31,0-35,0)	100	min. 55,0	6,0
			1000	29,5-30,5 (28,5-31,5)	375	6,5-7,5 (5,5-9,0)	1,0
					2500	17,0-21,0 (16,0-22,0)	1,5
							2,5 See (15)
							3,0 Point 8 a (16)

Checking values in brackets

3,0 less control rod travel than in Column 2

01.85

BOSCH

Geschäftsbereich KH Kundendienst Kfz-Ausrüstung
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Imprimé en République Fédérale d'Allemagne par Robert Bosch GmbH

1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1,4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 L

1. Edition

En

Testoil-ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 4
Komb. Nr. 0 400 074 997

supersedes

company Daimler-Benz

engine OM 615
49 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

1,70-1,80
(1,65-1,85)

mm (from BDC)

Control rod travel

18,5-21,5

Rotational speed	Control rod travel	Fuel delivery	Difference	Control rod travel	Fuel delivery	Spring pre-tensioning (compensating valve)
rev/min	mm	cm ³ /100 strokes	cm ³ /100 strokes	mm	cm ³ /100 strokes	mm
1	2	3	4	2	3	6
1000	13,0+0,1	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1 (0,15)			
1600			0,25(3,0)			
2300			0,25(3,0)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	mm	rev/min	4	mm	rev/min	7	rev/min	mm
11-15	① min. 11,0 ② max. 10,5 ③ 6,1-6,3 ④ ** ⑤ 2,0	250 300 375 395 720-820	50	⑦ 12,4-12,6 ⑧ 9,5 ⑨ ⑩ 0-1,0 ⑪	2300 2570 2950		⑫ 100 ⑬ 1600 ⑭ 1000 ⑥ Switching point	min. 20,1 12,7-12,9 13,0-13,1

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery		Difference	
Test oil temp 40°C (104°F)					Idle			
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8	
2300	38,5-40,5 (37,5-41,5)	2570 * RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min. 53,0	6,0	⑫a
					375	6,5-7,5 (6,0-8,0)	1,0 (1,5)	⑮
			1000	37,0-38,0 (36,0-39,0)	2570	15,0-21,0 (14,0-22,0)	6,0 (3,0)	⑯

Checking values in brackets

ca. 3,0 mm less control rod travel than in Column 2

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1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1.4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 1 1

2. Edition

En

PES 4 M 55 C 320 RS 107-1

RSF 375/2250 M 18

Komb.-Nr. 0 400 074 961 Sales model 0 400 074 958

1 - 3 - 4 - 2

0 - 90-180-270

supersedes 5.83

company Daimler-Benz

engine OM 616

53 kW (72) PS

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 mm (from BDC) (2,15-2,35) Control rod travel 20 mm

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,4 ^{+0,1}	3,9-4,0	0,25(0,30)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel	Rotational speed	Degree of deflection of control lever	Control rod travel	Rotational speed		Rotational speed	Control rod travel
1	2	3	4	5	6	7	8	9
9-13	① min. 11,0	250	50	⑦ 12,5-12,7	2200		⑫ 100	min. 20,1
	② max. 10,5	300		⑧ 8,2-8,6	2500		⑬ 1800	12,8-13,0
	③ 6,0-6,2	375		⑨ -	-		⑭ 1000	13,4-13,5
	④ **	400		⑩ 0-1,0	2950			
	⑤ -	-		⑪				
	⑥ 2,0	720-820					⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑮		Full-load speed regulation ⑮a	Variations in fuel delivery ⑮		Starting fuel delivery idle ⑮		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	39,4-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 ⑮a
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 ⑮
					2500	23,0-27,0 (22,0-28,0)	2,5 See Point 8 a ⑮

Checking values in brackets

ca. 4,2 less control rod travel than in Column 2

01.85

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1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1.4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 5 M 55 C 320 RS 108-1

RSF 350/2300 M 15

Komb.-Nr. 0 400 075 991

Sales model 0 400 075 989

supersede 5.83

company Daimler-Benz

engine OM 617 (65 KW)

1 - 2 - 4 - 5 - 3

0 - 72-144-216-288

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **2,20-2,30** mm (from BDC) **20 mm** Control rod travel
(2,15-2,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,4 ^{+0,1}	3,9-4,0	0,25(0,30)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
9-13	① min. 10,0	250	50	⑦ 12,5-12,7	2200		⑫ 100	min. 20,1
	② max. 9,5	300		⑧ 8,6-9,0	2500		⑬ 1800	13,0-13,2
	③ 6,0-6,2	350		⑨ -	-		⑭ 1000	13,4-13,5
	④ **	385		⑩ 0-1,0	2950		⑥ Switching point	
	⑤ 2,0	720-820		⑪				

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑰		Full-load speed regulation ⑱	Variations in fuel delivery ⑲		Starting fuel delivery Idle ⑳		Difference
Test oil temp. 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 ⑫a
			1000	39,0-40,0 (38,0-41,0)	350	6,0-7,0 (5,5-9,0)	1,0 ⑮
					2500	23,0-27,0 (22,0-28,0)	2,5 siehe Pkt. 8a ⑯

Checking values in brackets

ca. 4,0 mm less control rod travel than in Column 2

1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1.4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 ROL 12,2 d

1. Edition

En

PE G P 120 A 320 RS 3129 RQV 250-975 PA 709

1-4-2-6-3-5 je $60^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -

company: Rolls Royce

engine: Eagle III

204 kW

Komb.-Nr. 0 401 846 793

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Mark for end of pump delivery 7.5°
before end of pump delivery, cyl. 1.

Port closing at restroke (5,7-5,8 mm (from BDC) RW=9,0-12,0 mm)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,7+0,1	20,6-20,8	0,5(0,9)			
250	5,6-5,8	1,7-2,3	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 16	100 250	min. 7,1 5,6-5,8	200 450 700 975	
ca. 66	11,7 4,0 1250	1015-1025 1105-1135 0-1,0				355-415 (3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
900	206,0-208,0 (203,0-211,0)	1015-1025*	500	188,0-194,0 (185,0-197,0)	100	200,0-220,0 (196,0-224,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

BOSCH

Geschäftsbereich Kfz. Kundendienst. Kfz.-Ausstattung.
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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q

8. Edition

En

tropicalized version

PES 6 P 110 A 720 LS 375 RQ 250/1100 PA 335 DR

Komb.-Nrn. 0 402 046 179, 0 402 046 211,
0 402 046 175

supersedes 0,83

company: MAN

engine: D 2566 MT(F) (1)
206 kW (280 PS)

MAN-Nr. 1-7979

D 2566-MTF-Tropen
196 kW/1500 min⁻¹
(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,0-1,5	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Central rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH =	19,2-20,8 max. 46°	600	20,0	11,4 4,0 1350	1145-1160 1190-1220 0-1,0	250	7,4	100 250 355-395 = 2,0	min. 8,9 7,3-7,5	1100 700 870 970	12,4-12,5 13,3-13,4 13,0-13,2 12,5-12,8

Torque-control travel
on flyweight assembly dimension a = 0,2 mm

Speed regulation: At

1145-1160 min⁻¹
1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1100	0,7 bar 147,0-149,0 (143,5-151,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	225,0-245,0 (221,0-249,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)		

Checking values in brackets

1.85

BOSCH

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E14

E44

B Governor Settings

(2)

MAN 11,1 q - 2 -

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
Control rod travel		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min	mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,4	1145-1160	250	7,4	100	min. 8,9	1100	2,4-12,5
VH =	max. 46°			4,0	1190-1220			250	7,3-7,5	700	3,3-13,4
				1350	0 - 1,0			355-395	= 2,0	870	3,0-13,2
										970	2,5-12,8

Torque-control travel on flyweight assembly dimension a 0,2 mm Speed regulation At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ³ /1000 strokes	rev/min	Control rod travel	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel
1	2	3	4	5	6	7	8
(2)		-	LDA	0,2 bar	100	215,0-235,0	
LDA	0,7 bar		500	115,0-119,0		(211,0-239,0)	
1100	139,0-141,0			(112,0-122,0)			
	(138,0-142,0)		LDA	0 bar			
LDA	0,7 bar		500	103,0-107,0			
700	150,0-154,0			(101,0-111,0)			
	(147,0-157,0)						

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PES 6 P .. LS 375 + RQ .. PA 335 DR	0,70	0 0,20 0,32	13,3-13,4 11,3-11,4 11,8-11,9 12,6-12,8

Notes.

(1) when n =

En

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 11,1 q 19

3. Edition

tropicalized version

En

PES 6 P 110 A 720 LS 375 RQ 250/1100PA 658

Komb.-Nr. 0 402 046 251
0 402 046 253
0 402 046 297

superseded 5-84

company: MAN

engine: D 2566 MT (F) (1)

206 kW (280 PS)

MAN-Nr. 2-7499

D 2566 MTF-Tropen

196 kW/1500 min⁻¹

(2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test: ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

 $3,0 - 3,1$
(2,95-3,15)

mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,4+0,1	14,6-14,9	0,4(0,75)			
250	7,3-7,5	1,1-1,6	0,45(0,75)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH	19,2-20,8 = max. 46°	600	20,0	11,4,0 1350	1145-1160 1190-1220 0-1,0	250	7,4	100 250 355-395 = 2,0	min.8,9 7,3-7,5	1100 700 880 990	12,4-12,5 13,3-13,4 13,1-13,3 12,6-12,9

Torque-control travel on flyweight assembly dimension a = 0,3 mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
LDA 1100	0,7 bar 146,0-149,0 (143,5-151,5)	-	LDA 500	0,2 bar 123,0-127,0 (120,0-130,0)	100	215,0-225,0 (211,0-229,0)
LDA 700	0,7 bar 157,0-161,0 (154,0-164,0)		LDA 500	0 bar 110,0-113,0 (107,5-115,5)		

Checking values in brackets

1.85

E16

E46

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B Governor Settings

(2)

MAN 11,1 q 19

- 2 -
(2)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm		Setting point	Test specifications			Setting point	Test specifications			Control rod travel	
rev/min	mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	11,4	1145-1160	250	7,4	100	min. 8,9	1100	12,4-12,5
VH =	max. 46°			4,0	1190-1220			250	7,3 - 7,5	700	13,3-13,4
				1350	0-1,0			355-395	= 2,0	870	13,0-13,2
										970	12,5-12,8

Torque control travel on flyweight assembly dimension a **0,2** mm Speed regulation At **1145-1160 min⁻¹** 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104 F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ¹ /1000 strokes	rev/min	rev/min	cm ¹ /1000 strokes	rev/min	cm ¹ /1000 strokes / mm
1	2	3	4	5	6	7
(2)		-	LDA	0,2 bar	100	215,0-235,0
LDA	0,7 bar		500	115,0-119,0		(211,0-239,0)
1100	139,0-141,0			(112,0-122,0)		
LDA	0,7 bar		LDA	0 bar		
700	150,0-154,0		500	103,0-107,0		
	(147,0-157,0)			(101,0-111,0)		

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = **500** rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PES 6 P..LS 375 + RQ..PA 335 DR	0,70	0 0,20 0,32	13,3 - 13,4 11,3 - 11,4 11,8 - 11,9 12,6 - 12,8

Notes:

(1) when n =
En

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388

RQ 250/1100 PA 452

Komb.-Nr. 0 402 046 195

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 5,85

company MAN

engine: D 2566 MK (F)
235 kW (1)

D 2566 MKF-Tropen
224 kW (2) MAN-Nr. 1-7980

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,0-3,1}{(2,95-3,15)}$ mm (from BUC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1)

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	1100	11,3-11,4
VH =	max. 46			4,0	1185-1215			250	6,3-6,5	750	13,1-13,2
				1400	0 - 1,0			350-390	= 2,0	865	12,7-12,9
										975	11,7-12,0

Torque-control travel
on flyweight assembly dimension a = 0,7 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		Control rod travel mm 7
LDA	1,0 bar			LDA	1,0 bar	100	205,0-225,0 (201,0-229,0)
750	217,0-220,0 (214,0-223,0)			650	208,0-213,0 (205,0-216,0)		
1100	180,0-185,0 (177,0-188,0)			LDA	0,34 bar		
(1)				500	145,0-150,0 (142,0-153,0)		
				LDA	0 bar		
				500	101,0-104,0 (98,0-107,0)		

Checking values in brackets

1.85

Testoil-ISO 4113

B Governor Settings

(2)

MAN 11,1 q 6

- 2 -

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
Control rod travel		Setting point	Test specifications			Setting point	Test specifications			Control rod travel	
rev/min	mm	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm	Control rod travel mm	rev/min	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	19,2-20,8	600	20,0	10,3	1145-1160	250	6,4	100	min. 7,9	1100	1,3-11,4
VH =	max. 46°			4,0	1185-1215			250	6,3-6,5	750	3,1-13,2
				1400	0 - 1,0			350-390	= 2,0	865	2,7-12,9
										975	1,7-12,0

Torque control travel on flyweight assembly dimension a 0,7 mm Speed regulation 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever (Test oil temp 40°C (104°F))		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes / mm
1	2	3	4	5	6	7
(2)			LDA	1,0 bar	100	205,0-225,0 (201,0-229,0)
LDA	1,0 bar	-	650	196,0-202,0 (194,0-204,0)		
750	207,0-209,0 (203,0-213,0)		LDA	0,34 bar		
LDA	1,0 bar		500	141,0-147,0 (139,0-149,0)		
1100	171,0-177,0 (169,0-179,0)		LDA	0 bar		
			500	97,0-99,0 (93,0-103,0)		

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure - bar	Gauge pressure - bar	diminution difference mm (1)
PES 6 P .. LG 388 + RQ .. PA 452	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes:

(1) when n =

En

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 120 A 720 LS 388 RQ 250/1100 PA 658-6

Komb.-Nr. 0 402 046 260, 0 402 046 261

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

superseded 6.83

company MAN

engine: D 2566 MKF
235 kW (320 PS) (1)
D 2566 MKF-Tropen
224 kW (2)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $3,0-3,1$
(2,95-3,15) mm (from BDC) Zyl. 6; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	13,1+0,1	21,7-22,0	0,5(0,9)			
250	6,3-6,5	1,1-1,7	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

(1)

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH = max. 46°	19,2-20,8	600	20,0	10,3 4,0 1400	1145-1160 1185-1215 0 - 1,0	250	6,4	100 250 350-390=2,0	min.7,9 6,3-6,5 390=2,0	1100 750 900 1000	11,3-11,4 13,1-13,2 12,6-12,7 11,8-12,0

Torque-control travel
on flyweight assembly dimension a = 0,7 mmSpeed regulation: At 1145-1160 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3		rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
(1) LDA 750	1,0 bar 217,0-220,0 (214,0-223,0)		-	LDA 650	1,0 bar 208,0-213,0 (205,0-216,0)	100	205,0-225,0
LDA 1100	1,0 bar 180,0-185,0 (177,0-188,0)			LDA 500	0,34 bar 145,0-150,0 (142,0-153,0)		
				LDA 500	0 bar 101,0-104,0		

Checking values in brackets

(98,0-107,0)

1.85

B Governor Settings

(2)

MAN 11,1 q 11 - 2 - ②

Checking of slider PRG check ①		Full load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600 VH =	19,2-20,8 max. 46°	600	20,0	10,3 4,0 1400	1145-1160 1185-1215 0 - 1,0	250	6,4	100 250 350-390 = 2,0	min. 7,9 6,3-6,5 350-390 = 2,0	1100 750 865 975	11,3-11,4 13,1-13,2 12,7-12,9 11,7-12,0

Torque control travel on flyweight assembly dimension a **0,7** mm Speed regulation At **1145-1160 min⁻¹** 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40 C (104 F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	Control rod travel
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm 7
(2) LDA 750	1,0 bar 207,0-209,0 (203,0-213,0)	-	LDA 650	1,0 bar 196,0-202,0 (194,0-204,0)	100	205,0-225,0 (201,0-229,0)
LDA 1100	1,0 bar 171,0-177,0 (169,0-179,0)		LDA 500	0,34 bar 141,0-147,0 (139,0-149,0)		
			LDA 500	0 bar 97,0-99,0		

Checking values in brackets

Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

Test at n = **500** rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel diminution difference
	Gauge pressure bar	Gauge pressure bar	mm (1)
PES6P...LS 388 +RQ .. PA 452	1,0	0 0,34 0,61	13,1-13,2 9,4-9,5 10,9-11,0 12,5-12,9

Notes

(1) when n =
En

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 8,8 L
2. Edition

En

PE 6 P 120 A 320 RS 474 RQV 275-1200 PA 425-3
Komb.-Nr. 0 401 846 499
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

superseed 84
company RVI
engine MIDS 0620 30
168 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Testoil-ISO 4113

Port closing at prestroke 3,5-3,6 mm (from BDC) RW = 9,0-12,0 mm
(3,45-3,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	12,6+0,1	14,8-15,0	0,5(0,9)			
275	6,0-6,2	0,8-1,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1230	15,2-17,8	-	-	-	ca. 12	200	min.9,1	275	1,2-1,4
ca.65	11,6 4,0 1500	1265-1275 1380-1410 0-1,0				275-360	275	6,0-6,2	400 900 1200	2,9-3,4 5,8-6,0 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed (2b) limitation intermediate speed	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control (5) travel	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
LDA 1200	0,7 bar 148,0-150,0 (145,0-153,0)	1265-1275*	LDA 750	0,7 bar 137,0-143,0 (134,0-146,0)	100	105,0-125,0 (101,0-129,0)	-	-
			LDA 500	0 bar 91,0-93,0 (88,0-96,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

RVI 8,8 1

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P .. RS 474 + RQV..PA 425-3	0,70		12,6 - 12,7
		0	11,3 - 11,4
		0,20	12,3 - 12,4
		0,16	11,6 - 11,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 18,3 d

5. Edition

En

PE 10 P 110 A 320 LS 3818 RQV 300-1150 PA 486-2

1- 8- 7- 6- 3 - 5 - 2 - 10- 9 - 4

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

supersedes 84

company Daimler-Benz

engine: OM 423

261 kW (355 PS)

Komb.-Nr. 0 401 849 706

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0-4,1 mm (from BDC) Zyl. 10 ; RW = 9,0-12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,1+0,1	12,4-12,6	0,4 (0,8)			
300	8,5-8,7	1,4-2,2	0,4 (0,7)			
600	-	C, Sp. 4 + 5	0,6 (0,9)			
900	-					

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 23	100	min. 10,2	300	1,6-1,8
ca. 55	11,1 4,0 1400	1190-1200 1235-1265 0 - 1,0					300 430-490 = 2,0	8,5-8,7	800	5,8-6,2
									1200	8,2-8,4
									1260	10,0

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational-speed limitation intermediate speed		Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
2		4a		5a		6		5	
rev/min	cm ³ /1000 strokes	rev/min		high idle speed	5b	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1150	124,0-126,0 (121,5-128,5)	1190-1200*		600	110,0-114,0 (107,0-117,0)	100	140,0-160,0 (136,0-164,0)	1150	12,1+0,1
				900	118,0-123,0 (115,0-126,0)			600	12,5+0,1
								900	12,4+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

Testoil-ISO 4113

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 r 8

1. Edition

En

PE 6 P 110 A 720 RS 3040
Komb.-Nr. 0 401 846 795

RQV 275-1000 PA 555-2

supersedes _

company: Scania

engine: DS 11 14

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{3,3-3,4}{(3,25-3,45)}$ mm (from BDC) ; RW = 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,6+0,1	16,8-17,0	0,6(0,8)			3,3 [±] 0,1 (3,0-3,5)
275	4,4-4,6	1,7-2,1	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 8	100	min. 5,9	275	0,9-1,1
ca. 60	12,6 4,0 1350	1040-1050 1195-1225 0 - 1,0					275 325-385= 2,0	4,4-4,6	425 520 050	3,2-4,3 5,9-6,1 8,1

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 168,0-170,0 (166,0-172,0)	1040-1050*	LDA 1000	0,9 bar 171,5-176,5 (169,0-179,0)	100	240,0-290,0 = 20,0-21,0 mm RW	-	-
			LDA 500	0 bar 133,0-137,0 (131,0-139,0)	275	17,0-21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 r 8 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE6P..RS 3040 + RQV..PA 555-2	0,90	0 0,42 0,29	13,6-13,7 12,0-12,1 13,2-13,3 12,3-12,5

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

SCA 11,0 y 1

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 20.2.1984
- Start of fuel delivery-engine: 19° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d
6. Edition

En

Testoil-ISO 4113

PE 6 P 120 A 320 RS 3050 RQV 250-1100 PA 431/2R
Komb.-Nr. 0 401 846 714

supersedes 8.81
company: Volvo
engine: TD 120 F
283 kW (385PS)

Testing with T nozzles and fuel lines 8 x 2 x 1000
according to ..W 400/305

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,40-2,50$ mm (from BDC)
($2,35-2,55$)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	13,5-13,6	23,9 - 24,2	0,4 (0,8)			2,5 ^{+0,1} ** (2,2-2,9)
250	3,8-3,9	2,0 - 2,5	0,3 (0,7)			
700	- - -	C, Sp. 4-5	0,6 (1,0)			

Adjust the fuel delivery from each outlet according to the values in

** In the case of greater dispersion after the delivery-valve
spring pre-tension accordingly.

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 12	100 250 500 280-340 = 2,0	min. 6,5 3,8-3,9 max. 1 = 2,0	250 800 170	0,5-1,2 4,6-5,0 8,3
ca. 48	12,5 4,0 1350	1140-1150 1250-1270 0 - 1,0				3a				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed	Fuel delivery characteristics		Starting fuel delivery idle switching point		Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,0 bar 239,0-242,0 (236,0-245,0)	1140-1150*	LDA 700	0 bar 152,0-156,0 (149,0-159,0)	100 250	390,0-430,0 20-25 **		
					Streuung max. 3(7)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 d - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel - diminution difference mm (1)
PE6P.. RS 3050 +RQV..PA431/2R	0,14	0,80	10,5-10,6 13,1-13,3

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d 2

4. Edition

En

PE 6 P 120 A 320 RS 3050 RQV 250-1025 PA 611

Komb.-Nr. 0 401 846 751

Values only apply to test nozzle-and-holder
assembly 1 688 90 019 and fuel-injection test
tubing 1 680 750 067

supersedes 84

company Volvo

engine: TD 120 FC

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,4-2,5$
($2,35-2,55$) mm (from BDC) bei RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	2,8+0,1	23,0-23,3	0,5 (0,9)			2,5 ± 0,1 (2,2 - 2,9)
250	3,6-3,8	1,8-2,3	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1080	15,2-17,8	-	-	-	ca. 8	100	min. 5,1	200	0,6-0,9
ca. 64	11,8	1085-1095					250	3,6-3,8	475	3,9-4,5
	4,0	1150-1180					300-360 = 2,0		670	6,4-6,6
	1300	0-1,0							940	
									1025	7,5

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 230,0-233,0 (227,0-236,0)	1085-1095*	LDA 700	0 bar 138,0-142,0 (135,0-145,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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F5

FS

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 d 2

- 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P..RS 3050 + RQV..PA 611	1,20	0 0,82 0,07	12,8 - 12,9 9,1 - 9,2 12,6 - 12,7 9,2 - 9,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 SCA 11,0 s 1

4. Edition

En

supersedes 6.83

company Saab-Scania

engine DN11 01

Testoil-ISO 4113

PE 6 P 110 A 720 RS 3065 RSV 350-1100 P1/481

Komb.-Nr. 0 401 876 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\overset{3,3-3,4}{(3,25-3,45)}$ mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5+0,1	13,5 - 13,7	0,6(0,8)			2,5 ± 0,1 (2,2-2,9)
350	6,2-6,4	1,5 - 1,9	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0	-	-	-	ca.20	350	5,5	-	-
	x = 3,25						350	5,9-6,1		
⑤ ca.66	1140-1150=11,5						490-550=2,0			
	1210-1240= 4,0									
	1350=0,3-1,7									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
1100	135,0-137,0 (133,0-139,0)	1140-1150*	600	131,5-136,5 (129,0-139,0)	100	190,0-240,0 = 20,0-21,0 mm RW	-	-	

Checking values in brackets

* 1 mm less control rod travel than col. 2

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

②

Test Specifications

Fuel Injection Pumps ②

and Governors

40

WPP 001/4 SCA 11,0 s2

2. Edition

En

PE6P 110 A 720 RS 3065

RQ 250/1100 PA 470 R

 superseded 6.83
 company Scania
 D 11
 engine:

Komb.-Nr. 0 401 846 722

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,5+0,1	13,5-13,7	0,6 (0,8)			2,5 ±0,1
225	5,8-6,0	0,9 - 1,3	0,2(0,4)			(2,2-2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking on slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 4		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11		Control rod travel mm 12	
550	19,2-20,8	550	20,0	11,5	1145-1160	225	5,9	100 min. 7,3		-		-	
VH = max. 46°				4,0	1215-1245			225 5,8-6,0					
				1400	0 - 1,0			320-380 = 2,0					

Torque-control travel on flywheel assembly dimension a =

mm

Speed regulation: At 1145-1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 12	
1100	135,0-137,0 (133,0-139,0)	-		600	131,5-136,5 (129,0-139,0)	100	190,0-240,0 (186,0-244,0)		
						225	9,0 - 13,0 Streug. max. 2 (4)		

Checking values in brackets

3.85

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S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 6.4.1984
- Start of fuel delivery-engine: 23° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 K 3

1. Edition

En

PE 6 P 120A 320 RS 3118-2 RQV 250-900 PA 657-5

Komb.-Nr. 0 401 846 796

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company: Volvo

engine: TD 121 FC
232 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6-2,7$
(2,55-2,75) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	19,7-20,0	0,5(0,9)			2,5 ^{+0,1} (2,2-2,9)
250	3,3-3,5	1,8-2,3	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	980	15,2-17,8	-	-	-	ca. 7	100	min. 4,8	200	0,6-0,9
							250	3,3-3,5	500	4,2-4,8
							280-340	= 2,0	660	
ca. 62	10,4	940-950							-	6,4-6,6
	4,0	1000-1030							850	
	1100	0 - 1,0							900	7,2

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,7 bar 197,0-200,0 (194,0-203,0)	940-950 *	LDA 700	0 bar 150,0-154,0 (147,0-157,0)	100	240,0-280,0 = 20,0-21,0 mm RW	-	-
					250	18,0-23,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

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F11

FAA

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 K3 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3118-2 +RQV..PA 657-5	0,70	0 0,43 0,17	11,4-11,5 9,1-9,2 11,2-11,3 9,2-9,4

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 PEN 12,0 f

1. Edition

En

PE 6 P 120 A 320 RS 3122 RSV 200-900 P 4/421 R

Komb.-Nr. 0 401 876 725

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes

company Volvo-Penta

engine TMD 120 B

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$ mm (from BDC)
(2,55-2,75)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,7±0,1	18,3-18,7	0,5 (0,9)			2,5 ± 0,1
250	4,2-4,4	1,6-2,0	0,5 (0,8)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,7	-	-	-	ca. 22	250	3,8	-	-
	x = 4,0						250	4,2-4,4		
							300-360	= 2,0		
ca. 53	10,7	940-950								
②a	4,0	970-1000								
	1130	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational-speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤ Idle		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min 1	cm ³ /1000 strokes 2	3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
700	183,0-187,0 (181,0-189,0)	940-950*	900	189,0-193,0 (186,0-196,0)	100	390,0-440,0 (386,0-444,0) =20,0-21,0 mm RW	250	4,3	
					250	16,0-20,0 (13,0-23,0)			

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps ①A and Governors

40
WPP 001/4 MB 14,6 p
3. Edition

En

PE 8 P 120 A 320 LS 3816 RSV 650-1150 P0/823

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je 45° ±0,5° (±0,75°)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes 5.84
company Daimler-Benz
engine OM 422 A
206 kW
Komb.-Nr. 0 401 87870

A. Fuel Injection Pump Settings

4,0-4,1

Port closing at prestroke

(3,95-4,15)

mm (from BDC) 7,1. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre tensioning (torque control valve) mm 6
1180	9,3-9,4	13,7-13,9	0,5 (0,9)			
650	3,1-3,3	1,6-2,2	0,8 (1,2)			
975	-----	C, Sp. 4 u.5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control lever deflection in degrees 7 8 9			③ Torque control Control rod travel 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					rev/min	Control rod travel mm		rev/min	Control rod travel mm
loose	800 0,3-1,0 x = 2,0		-	-	-	-	-		1180 9,3-9,4	
ca. 46	8,3 1210-1220 4,0 1235-1250								975 10,1-10,2	
②a 1400	0,3-1,7								1075 9,6-9,8	

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		⑥ Rotational speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery ⑤ Idle rev/min 6 cm ³ /1000 strokes 7		④a Idle stop rev/min 8 Control rod travel mm 9	
1180	137,0-139,0 (134,0-142,0)	1160-1170* **		975	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

** When checking the full-load delivery, set the speed regulation at 1200 min/1. After checking set it back at 1150 min/1.

* 1 mm less control rod travel than col 2

2.85

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F14

FAY

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 14,6 p 1

1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RSV 650-1150 POA 823

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 0 67

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

supersedes

company Daimler-Benz

engine OM 422 A

206 kW

Komb.-Nr. 0 401 878 70

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0-4,1$ mm (from BDC) $(3,95-4,15)$ Zyl. 8

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1130	9,3-9,4	13,7-13,9	0,5 (0,9)			
650	3,1-3,3	1,6-2,2	0,8 (1,2)			
975	-	C, Sp. 4 u. 5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 24	650	3,6	1130	9,3-9,4
	x = 2,25						650	3,5-3,7	1000	10,1-10,2
							655-695	= 2,0	1050	9,6-9,8
ca. 46	8,3	1210-1220								
②a	4,0	1235-1250								
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop		⑥ Rotational speed limit		③a Fuel delivery characteristics		Starting fuel delivery ⑤		④a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ...)							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
1130	137,0-139,0 (134,0-142,0)	1160-1170*		1000	152,0-158,0 (149,0-161,0)	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Testoil-ISO 4113

F45

F15

Test Specifications Distributor-Type Fuel Injection Pump

46

WPP 001/4 STE 4,0 h 1

1. Edition

En

Testoil ISO 4113

VA 4/100 H 1200 CR 145-2
0 460 304 228
DHK: 1688 901 020/172 + 3 bar

supersedes
company **Steyr**
engine **WD 412-40**

All test specifications are valid for
Bosch Fuel Injection Pump Test Benches
and Testers
Test Instructions and Test Equipment
VDT-WPP 161/4 B
Pre-setting see reverse side

Pre-stroke setting **0,3 mm**

1. Settings	rev/min	Settings	Charge-air press kp/cm ²	Difference in delivery cm ³
1 1 Timing device travel	800	4,2-5,2 mm		
1 2 Supply pump pressure	800	4,2-4,7 kp/cm ²		
1 3 Full load delivery without charge-air pressure	700	77,0-79,0 cm ³ /1000 strokes		
Full load delivery with charge-air pressure	-	cm ³ /1000 strokes		
1 4 Idle speed regulation	280	12,0-18,0 cm ³ /1000 strokes		
1 5 Start	100	min. 80,0 cm ³ /1000 strokes		
1 6 Full-load speed regulation	1290	36,40-44,0 cm ³ /1000 strokes		

2. Test Specifications

Checking values in brackets

2 1 Timing device	rev/min	600	800	1000
	mm	1,7-2,7 (1,5-2,9)	(4,0-5,4)	7,5-8,5 (7,3-8,7)
2 2 Supply pump	rev/min	200	800	1200
	kp/cm ²	1,2-1,7 (1,0-1,9)	(4,0-4,9)	5,5-6,1 (5,3-6,3)
Overflow delivery	rev/min	500	1200	
	cm ³ /10 s	55-97 (40-112)	55-97 (40-112)	

2 3 Fuel deliveries

Speed control lever	Delivery lever	rev/min	cm ³ /1000 strokes	Charge-air pressure kp/cm ²
End stop	Full	1380	max. 2,0	
		1330	min. 2,0	
		1290	(35,0-45,0)	
		1180	74,5-76,5 (73,5-77,5)	
		700	(76,0-80,0)	
		500	76,5-79,5 (75,5-80,5)	
	Stop	1200	0	
Idle stop	Full	280	(11,0-19,0)	
		350		
		410		
		100		
	Start		min. 2,0 max. 2,0 min. 80,0	

3.85

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Angle to the stop plate	Pre-setting dimensions
Pump $\alpha = 25 \pm 4^\circ$ $\beta = 40 \pm 8^\circ$ $\gamma = 30 \pm 8^\circ$ $\delta = 60 \pm 8^\circ$	Pump Dimension IV Dimension V = 24,65 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PER 5,8 c 4

3. Edition

En

Testoil-ISO 4113

VE 6/12 F 1300 L 21-2

Overflow temperature 45° C

 supersedes 12.82
 company: Perkins
 engine: T 6.354.4

0 460 426 013

DHK: 1 688 901 020

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,45 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	600	2,5-2,9 mm	0,65	
1.2 Supply-pump pressure	600	3,8-4,4 bar (kgf/cm ²)	0,65	
1.3 Full-load delivery with charge-air pressure	1000	92,5-93,5 cm ³ /1000 strokes	0,65	max. 3,5
Full-load delivery without charge-air pressure	500	68,5-72,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	270	8,0-12,0 cm ³ /1000 strokes	0	max. 3,5
1.5 Full-speed regulation	1480	42,0-50,0 cm ³ /1000 strokes	0,65	
1.6 Start	100	min. 78 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 0,7-1,5 (0,4-1,8)	600 (2,0-3,4)	800 3,8-4,6 (3,5-4,9)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 3,0-3,6	1300 6,0-6,6	
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	1300 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1550 1480 1300 1000 1000 700 * 500	max. 9,0 (41,0-51,0) 85,5-88,5 (84,0-90,0) (90,0-96,0) 78,5-82,5 (77,5-83,5) 84,5-88,5 (82,8-90,2) (66,8-74,2)	0,65 0,65 0,65 0,65 0 0,32 0
switch-off	1300	0	
Idle stop	330-420 270	0 (5,0-15,0)	
End stop	150 230	min. 78 max. 75	
2.4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,1-5,4
MS	0,9-1,1
SVS	max. 6,0
X K	20,2-22,2
B	
X L	12,5-15,8

Observations

* Manifold-pressure
compensator stroke
= 1,0 mm
Correction at the
adjusting nut. (46)

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/10 F 2400 L 32

Overflow temperature 45° C

 supersedes VW
 company: 087/10
 engine:

0 460 406 003

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting -- mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	--	-- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	--	--		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,8-3,2)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-110 (40-125)		2400 55-110 (40-125)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	(5,0-13,0) 15,0-22,0 (14,5-22,5) 22,0-24,0 (20,8-25,2) (26,8-31,2) 26,0-29,0 (24,5-30,5)	
switch-off elektr.	400	0	
Idle stop	400 350	3,0-9,0 (8,0-16,0)	
End stop	400 500	min. 20,0 max. 25,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
XK	18,5-20,5
XL	9,2-12,9

Observations

2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V test voltage xxx rated voltage 12V.
--------------	--

Test Specifications

Distributor-type

Fuel-injection Pumps

Test ISO 4113

VE 6/10 F 2400 L 32-1 (P)

0 460 406 009;

010

Overflow temperature 45° C

superseded 0.82

company: VW

engine: 087/10 Autom.

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	350	10,0-14,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2700 2600 2400 1500 750	(5,0-13,0) 15,0-22,0 (14,5-22,5) 22,0-24,0 (20,8-25,2) (26,8-31,2) 26,0-29,0 (24,5-30,5)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	400 350	3,0-9,0 (8,0-16,0)	
End stop	400 500	min. 20 max. 25	

3. Dimensions

for assembly
and adjustment

Designation	for assembly and adjustment
K	3,2-3,4
KF	6,4-6,6
MS	1,4-1,6
SVS	max. 3,0
A	
XK	18,5-20,5
XL	9,2-12,9

Observations

Stop check (lever)
at n = 2400 min/1

2.4 Solenoid	max. cut-in voltage test voltage	xxxx min. 10,0 V xxxx rated voltage 12 V!
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VWV 2,4 k

2. Edition

En

VE 6/10 F 2400 L 32-2

Overflow temperature 45° C

 superseded 3.84
 company: VWV
 engine: 087/10

0 460 406 037

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800	max. 4,0	
	2700	(5,0-13,0)	
	2400	22,0-24,0 (20,7-25,3)	
	1500	(26,7-31,3)	
	750	26,0-29,0 (24,5-30,5)	
switch-off	70-400	0	
Idle stop	375	(4,0-12,0)	
	600	max. 4,0	
End stop	400	min. 20,0	
	500	max. 25,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.
--------------	--

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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 2,4 k 2

2. Edition

En

VE 6/10 F 2400 L 32-3

Overflow temperature 45° C

0 460 406 038

sund: sades 3.84

company: VW

engine: 087/10

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,8-3,2 mm		
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	28,5-29,5 cm ³ /1000 strokes		max. 2,5
Full-load delivery without charge-air pressure	-	cm ³ /1000 strokes		
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	100	min. 35 cm ³ /1000 strokes		
1.6 Start	2700	6,0-12,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 0,8-1,6 (0,5-1,9)	1500 (2,3-3,7)	2400 5,7-6,5 (5,4-6,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,8-3,4		2400 7,7-8,3
Overflow delivery	n = rev/min cm ³ /10 s	600 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2700 2400 1500 750	max. 4,0 (5,0-13,0) 22,0-24,0 (20,7-25,3) (26,7-31,5) 26,0-29,0 (24,5-30,5)	
switch-off elektr. mech.	70-400 2400	0 0	
Idle stop	600 375 400 500	max. 4,0 (4,0-12,0) min. 20,0 max. 25,0	
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V xxxxxxx rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	6,4-6,6
MS	1,5-1,7
SVS	3,6
A	
B	

Observations

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 REN 2,0 b

5. Edition

En

VE 4/9 F 2250 R 41

Overflow temperature 45° C

0 460 494 027

 superseded by
company: Renault
engine: 852

Test ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,4-4,8 mm		
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	39,5-40,5 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	400	7,0-11,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	17,0-23,0 cm ³ /1000 strokes		
1.6 Start	100	min. 52,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1400	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,6-3,4 (2,3-3,7)	1400 (3,9-5,3)	2000 6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1000 3,9-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2250 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)	3. Dimensions for assembly and adjustment mm
End stop	2550 2400 2200 2100 1400 1000	max. 2,0 (16,0-24,0) 32,8-34,8 (31,5-36,1) 33,8-35,8 (32,5-37,1) (37,7-42,3) 36,8-39,8 (35,3-41,3)		K KF MS SVS max. 3,5
switch-off	2500	0		A XK B XL 20,1-22,1 9,5-13,3
Idle stop	650 400	max. 5,0 (5,0-13,0)		Observations
End stop	320 430	min. 45,0 max. 45,0		
2.4 Solenoid	max. cut-in voltage xxx min. 10,0 V rated voltage 12V.			

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3.85

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 PEU 2,3 b 3

2. Edition

En

Testoil-ISO 4113

VE 4/10 F 2075 R 62 0 460 404 011
 DHK: 1 688 901 022/130 bar
 Test pressure line
 6x2x450/1 680 750 073

Overflow temperature 45° C

supersedes 3.84
 company: Peugeot
 engine: XD 2 S

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	5,2-5,6 mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	46,5-47,5 cm ³ /1000 strokes	0,67	2,0 (3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	375	12,0-16,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2400	12,0-18,0 cm ³ /1000 strokes	0,67	
1.6 Start	100	min. 57,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1400	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,67 bar	n = rev/min mm	750 1,7-2,5(1,4-2,8)	1400 (4,7-6,1)	2000 7,9-8,7(7,6-9,0)
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2000 7,1-7,7
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 55-138(40-153)		2075 (0,67 bar) 55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2500 2400 2000 1250 750 * 500	5,0-11,0 (4,0-12,0) (11,0-19,0) 44,0-47,0 (43,2-47,8) (44,7-49,3) 42,5-43,5 (40,7-45,3) (34,2-38,8)	0,67 0,67 0,67 0,67 0,25 0
switch-off	2075	0	
Idle stop	375 480 1250	(10,0-18,0) max. 1,0 max. 2,0	
End stop	320 420	min. 52 max. 52	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 4,6
A XK	20,2-22,2
B XL	9,5-12,8

Observations

* Manifold-pressure
compensator stroke
= 3,5 mm
Correction at the
adjusting nut. (46)

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
 041X01000XX rated voltage 12 V.

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1.85

Test Specifications Distributor-type Fuel-injection Pumps

En

Test ISO 4113

VE 4/10 F 2125 R 62-2 Overflow temperature 45° C
 DHK: 1 688 901 022/130 bar
 Test pressure line
 6x2x450/1 680 750 073

supersedes 3.84
 company: Peugeot
 engine: XD 2 S 81 A

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	5,2-5,6 mm	0,67	
1.2 Supply-pump pressure	1400	5,2-5,8 bar (kgf/cm ²)	0,67	
1.3 Full-load delivery with charge-air pressure	1250	46,5-47,5 cm ³ /1000 strokes	0,67	2,0 (3,0)
Full-load delivery without charge-air pressure	500	36,0-37,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	425	12,0-16,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2450	12,0-18,0 cm ³ /1000 strokes	0,67	
1.6 Start	100	min. 57,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1400	-		

2. Test Specifications checking values in brackets ()

2.1 Timing device LDA=0,67 bar	n = rev/min mm	750 1,7-2,5 (1,4-2,8)	1400 (4,7-6,1)	2000 7,9-8,7 (7,6-9,0)
2.2 Supply pump LDA=0,67 bar	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2000 7,1-7,7
Overflow delivery	n = rev/min cm ³ /10 s	500 (0 bar) 55-138 (40-153)		2125 (0,67 bar) 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 1450 2000 1250 750 * 500	5,0-11,0 (4,0-12,0) (11,0-19,0) 44,0-47,0 (43,2-47,8) (44,7-49,3) 42,5-43,5 (40,7-45,3) (34,2-38,8)	0,67 0,67 0,67 0,67 0,25 0
switch-off	2125	0	
Idle stop	425 590 1250	(10,0-18,0) max. 1,0 max. 2,0	
End stop	320 420	min. 52 max. 52	

3. Dimensions

Designation	for assembly and adjustment mm
K	Maß K 1
KF	5,7-5,9
MS	0,9-1,1
SVS	max. 4,5
^A XK	20,2-22,2
^B XL	9,5-12,8

Observations

* Manifold-pressure
compensator stroke
= 3,5 mm
Correction at the
adjusting nut. (46)

2.4 Solenoid

max. cut-in voltage xxx min. 10 V
 test voltage xxx rated voltage 12V.

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⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 PEU 2,5 a

3. Edition

En

VE 4/9 F 2250 R 84
0 460 494 079

Overflow temperature 45° C

supersedes 1.85
company: Peugeot
engine: XD 3

Test pressure line

DHK: 1 688 901 022/130 bar 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,4-5,8 mm		
1.2 Supply-pump pressure	1500	5,5-6,1 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1500	37,9-38,9 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	-	- cm ³ /1000 strokes		
1.4 Idle regulation	400	6,0-10,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2325	25,5-31,5 cm ³ /1000 strokes		
1.6 Start	100	min. 45 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,6-1,4 (0,3-1,7)	1000 2,5-3,1 (2,1-3,5)	1500 (4,9-6,3)	2000 8,1-8,9 (7,8-9,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,1-2,7		2200 7,5-8,1	
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)		2250 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2450 2325 2200 2000 1500 1000 600	max. 2,0 4,5-12,5 (4,5-12,5) (24,5-32,5) 39,9-41,9 (38,7-43,1) 39,2-41,2 (38,0-42,4) (36,2-40,6) 37,2-39,8 (36,3-40,7) 35,8-38,8 (34,3-40,3)	
switch-off			
Idle stop	400 440	(4,0-12,0)	
Endanschlag	350 450	max. 2,0 min. 45 max. 45	
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10 V xxx Nennspannung 12 V	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	K 1
KF	5,2-5,4
MS	0,9-1,2
SVS	3,3
A	
B	

Observations

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3.85

G2

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 4/12 F 1350 R 103-1

Overflow temperature 45° C

0 460 424 017

DHK: 1 688 901 020/172 + 3 bar

supersedes-

company: Iberica

engine: T 4.236

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02(0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	4,2-4,6 mm	0,8	
1.2 Supply-pump pressure	1000	5,5-6,1 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1000	90,5-91,5 cm ³ /1000 strokes	0,8	3,5 (4,5)
Full-load delivery without charge-air pressure	500	63,5-64,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	300	7,0-11,0 cm ³ /1000 strokes	0	3,5 (4,5)
1.5 Full-speed regulation	1450	52,0-58,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 70 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	500	1000	1300
LDA = 0,8 bar	mm	0,7-1,5 (0,4-1,8)	(3,7-5,1)	5,8-6,6 (5,7-6,9)
2.2 Supply pump	n = rev/min	500	1300	
LDA = 0,8 bar	bar (kgf/cm ²)	3,3-3,9	6,7-7,3	
Overflow delivery	n = rev/min	500	1300	
LDA = 0,8 bar	cm ³ /10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1650	max. 2,0	0,8
	1600	min. 3,0	0,8
	1550	16,5-23,5 (15,0-25,0)	0,8
	1450	(50,0-60,0)	0,8
	1300	83,5-86,5 (80,0-90,0)	0,8
	1000	(88,0-94,0)	0,8
	700 *	86,0-87,0 (82,8-90,2)	0,4
	500	85,0-88,0 (82,8-90,2)	0,8
	500	(60,3-67,7)	0
switch-off			
Idle stop	300	(4,0-14,0)	
	350	min. 1,5	
	430	max. 1,5	
End stop	110	min. 70	
	210	max. 60	

2.4 Solenoid

max. cut-in voltage
test voltage

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,2-5,4
MS	1,1-1,3
SVS	5,0
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,2 mm

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 3,6 e

2. Edition

En

Testoil-ISO 4113

VE6/11/F1900L113

Overflow temperature 45° C

 superseded 8.84
 company: Motori VM
 engine: HR 692 HT/9

0 460 416 022

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02(0,04)

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,7-5,3 mm	0,65	
1.2 Supply-pump pressure	1800	6,6-7,2 bar (kgf/cm ²)	0,65	
1.3 Full-load delivery with charge-air pressure	1500	47,5-48,5 cm ³ /1000 strokes	0,65	
Full-load delivery without charge-air pressure	600	36,0-40,0 cm ³ /1000 strokes	0	3,5 (4,0)
1.4 Idle regulation	450	10,0-14,0 cm ³ /1000 strokes	0	
1.5 Full-speed regulation	2000	40,5-47,5 cm ³ /1000 strokes	0,65	3,0 (4,0)
1.6 Start	100	min. 40,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,65 bar	n = rev/min mm	1000 2,1-2,9(1,8-3,2)	1500 (4,3-5,7)	1800 6,5-6,9 (6,0-7,4)
2.2 Supply pump LDA=0,65 bar	n = rev/min bar (kgf/cm ²)	400 1,7-2,3		
Overflow delivery	n = rev/min cm ³ /10 s	400 41-83(26-98)	1900 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2200	max 1,5	0,65
	2100	15,0-21,0(13,5-22,5)	0,65
	2000	(39,5-48,5)	0,65
	1900	45,2-47,8(43,9-49,1)	0,65
		(45,4-50,6)	0,65
	* 600	39,0-42,0(37,1-43,9)	0,26
	600	(34,6-41,4)	0
switch-off			
Idle stop	700	max 1,5	
	550	2,0-8,0(0,5-9,5)	
	450	(7,5-16,5)	
End stop	350	min 40	
	450	max 45	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	6,4-6,6
MS	0,9-1,1
SVS	2,4
XK	20,2-22,2
XL	11,9-15,2
A	
B	

Observations

 Manifold-pressure
 compensator stroke
 = 4,0 mm

2.4 Solenoid	max. cut-in voltage	min. 10 Volt	rated voltage 12V.
	test voltage		

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3.95

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Test ISO 4113

VE 6/12 F 1400 R 120-4
0 460 426 031

Overflow temperature 45° C

supersedes
company: MAN
engine: D0226 MC

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	800	3,5-3,9 mm	0,8	
1.2 Supply-pump pressure	800	5,1-5,7 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	630	85,5-86,5 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	1000	112,0-113,0 cm ³ /1000 strokes	0,8	4,0
1.4 Idle regulation	300	10,0-16,0 cm ³ /1000 strokes	0	3,5
1.5 Full-speed regulation	100	min. 70,0 cm ³ /1000 strokes	0	
1.6 Start	1440	92,0-100,0 cm ³ /1000 strokes	0,8	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	500	800	1100
LDA=0,8bar	mm	1,2-2,0 (0,9-2,3)	(3,0-4,4)	4,9-5,7 (4,6-6,0)
2.2 Supply pump	n = rev/min	500		1100
LDA=0,8bar	bar (kgf/cm ²)	3,8-4,4		6,1-6,7
Overflow delivery	n = rev/min	500		1400
	cm ³ /10 s	55-138 (40-153)		55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1650	max. 1,0	0,8
	1550	26,0-34,0 (25,0-35,0)	0,8
	1440	(91,0-101,0)	0,8
	1400	108,0-112,0 (107,0-113,0)	0,8
	1000	(109,5-115,5)	0,8
	800	110,0-114,0 (109,0-115,0)	0,8
	630	112,0-116,0 (110,3-117,7)	0,8
	* 630	106,5-107,5 (103,3-110,7)	0,4
	630	(82,3-89,7)	0

switch-off

Idle stop

	300		(8,0-18,0)
	350	max. 5,0	
	400	max. 1,0	
End stop	230	min. 100	
	400	max. 100	

2.4 Solenoid

max. cut-in voltage
test voltage

3. Dimensions

Designation	for assembly and adjustment mm
K	-
KF	5,7 - 6,0
MS	1,0 - 1,2
SVS	
A	25,0 - 27,0
B	13,5 - 16,8

Observations

Manifold-pressure
compensator stroke
= 4,5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 2,5 d

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2125 R 126-3

Overflow temperature 45° C

supersedes

company:

engine:

O 460 494 178

Test pressure line

DHK: 1 688 901 022 / 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

—

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,8-6,2 mm	0,8	
1.2 Supply-pump pressure	1500	5,6-6,2 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	53,7-54,7 cm ³ /1000 strokes	0,8	max. 2,5
Full-load delivery without charge-air pressure	500	41,3-42,3 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	17,0-21,0 cm ³ /1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2350	26,5-32,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 67 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	—			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	750	1000	1500	2000
LDA = 0,8 bar	mm	0,8-1,6 (0,5-1,9)	2,5-3,3 (2,2-3,6)	(5,3-6,7)	7,8-8,6 (7,5-8,9)
2.2 Supply pump	n = rev/min	200	750	2000	
LDA = 0,8 bar	bar (kgf/cm ²)	1,4-2,0	3,4-4,0	7,1-7,7	
Overflow delivery	n = rev/min	500 (0 bar)	2125		
	cm ³ /10 s	41-83 (26-98)	55-138 (40-153)		

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650	max. 1,0	0,8
	2350	(25,5-33,5)	0,8
	2250	38,5-44,5 (37,5-45,5)	0,8
	2000	52,2-54,2 (51,0-55,4)	0,8
	1500	(52,0-56,4)	0,8
	1000	51,8-54,8 (51,1-55,5)	0,8
	750 *	46,8-47,8 (44,3-50,3)	0,25
	500	(38,8-44,8)	0
switch-off			
Idle stop	400	(15,0-23,0)	
	450	5,0-9,0 (3,0-11,0)	
	550	max. 3,5	
End stop	230	min. 60	
	330	max. 60	
2.4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	K1
KF	5,2-5,4
MS	1,2-1,4
SVS	5,5
A	
B	
Observations	
* Manifold-pressure compensator stroke = 4,5 mm	
24 V pushing electromagnet	

Test Specifications

Distributor-type

Fuel-injection Pumps

En

Test ISO 4113

 VE 5/10 F 2400 L 137
 0 460 405 030

Overflow temperature 45° C

 supersedes 7.84
 company: VWV
 engine: 153

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

 Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,4-2,8 mm		
1.2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	1400	35,0-36,0 cm ³ /1000 strokes		2,5 (3,0)
Full-load delivery without charge-air pressure	375	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1.4 Idle regulation	2650	6,0-12,0 cm ³ /1000 strokes		
1.5 Full-speed regulation	100	min. 50,0 cm ³ /1000 strokes		
1.6 Start				
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2650 2400 1400 750	max. 3,0 (5,0-13,0) 28,0-30,0 (26,8-31,2) (31,8-36,2) 24,5-27,5 (23,0-29,0)	
switch-off			
mech.	2400	0	
elektr.	400	0	
Idle stop	375 450	(4,0-12,0) max. 3,0	
End stop	400 500	min. 15,5 max. 23,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

2.4 Solenoid

 max. cut-in voltage xxx min. 10,0 V
 max. rated voltage 12V.

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 VWV 2,0 i 2

3. Edition

En

VE 5/10 F 2400 L 137-1

Overflow temperature 45° C

supersedes 7.84

company: VWV

engine: 153

0 460 405 032

Testoil-ISO 4113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,14 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	2,4-2,8 mm		
1.2 Supply-pump pressure	1400	5,0-5,6 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	375	6,0-10,0 cm ³ /1000 strokes		2,0 (3,0)
1.5 Full-speed regulation	2650	6,0-12,0 cm ³ /1000 strokes		
1.6 Start	100	min. 50,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1400 (1,9-3,3)	2400 5,1-5,9 (4,8-6,2)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		2400 7,3-7,9
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2400 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2650 2400 1400 750	max. 3,0 (5,0-13,0) 28,0-30,0 (26,8-31,2) (31,8-36,2) 24,5-27,5 (23,0-29,0)	
switch-off	2400	0	
mech. elektr.	400	0	
Idle stop	375 450 400 500	(4,0-12,0) max. 3,0 min. 15,5 max. 23,5	
End stop			
2.4 Solenoid	max. cut-in voltage test voltage	xxx min. 10,0 V rated voltage 12V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-6,0
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

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3.85

G8

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VW 1,6 W 13

1. Edition

En

Testoil-ISO 4113

 VE 4/9 F 2400 R 138-4
 O 460 494 183

Overflow temperature 45° C

 supersedes
 company: VW
 engine: 086

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

—

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	2,1-2,5 mm		
1.2 Supply-pump pressure	1500	4,3-4,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	32,7-33,7 cm ³ /1000 strokes		max. 2,5
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes		max. 2,0
1.5 Full-speed regulation	2600	11,0-17,0 cm ³ /1000 strokes		
1.6 Start	100	min. 35,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1100 0,4-1,2 (0,1-1,5)	1500 (1,6-3,0)	2400 6,0-6,8 (5,7-7,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 2,2-2,8	2400 6,6-7,2	
Overflow delivery	n = rev/min cm ³ /10 s	600 41-83 (26-98)	2400 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2800 2600 2400 1500 600	max. 3,0 (10,0-18,0) 27,5-29,5 (26,3-30,7) (31,0-35,4) 21,7-24,7 (20,2-26,2)	
switch-off elektr.	400	0	
Idle stop	475 650 1200	max. 7,5 max. 5,0 min. 18,0	(4,0-12,0)
End stop	400 500	max. 23,5	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,3-1,5
SVS	4,8
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage test voltage xxx min. 10 Volt rated voltage 12V.
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3.85

G9

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VW 1,6 W 12

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2250 R 149-3

Overflow temperature 45° C

0 460 494 184

 supersedes
 company: **VW**
 engine: **085 T**

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

-

mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,3-3,7 mm	0,75	
1.2 Supply-pump pressure	1500	4,6-5,2 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	43,5-44,5 cm ³ /1000 strokes	0,75	max. 2,5
Full-load delivery without charge-air pressure	600	23,5-24,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	475	6,0-10,0 cm ³ /1000 strokes	0	max. 2,0
1.5 Full-speed regulation	2525	9,0-15,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 35 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1500 (2,8-4,2)	2250 6,1-6,9 (5,8-7,2)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	600 2,5-3,1	2250 6,5-7,1	
Overflow delivery	n = rev/min cm ³ /10 s	600 (0 bar) 41-83 (26-98)	2250 (0,75 bar) 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	38,0-40,0 (36,8-41,2)	0,75
	1500	(41,8-46,2)	0,75
	1000*	33,5-34,5 (31,8-36,2)	0,30
	600	31,5-34,5 (30,0-36,0)	0,75
	600	(21,0-27,0)	0
switch-off elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	1200	max. 4,0	
End stop	400	min. 22	
	500	max. 30	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	4,1
A	
B	

Observations

 * Manifold-pressure
 compensator stroke
 = 4,5 mm

2.4 Solenoid

 max. cut-in voltage xxx 10 V
 test voltage xxx rated voltage 12V.

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3.85

G10

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 REN 2,0 f

4. Edition

En

VE 4/9 F 2250 R 158
0 460 494 145

Overflow temperature 45° C

supersedes 10.84
company: Renault
engine: J85-706

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting - mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1400	4,4-4,8 mm		
1.2 Supply-pump pressure	1400	4,9-5,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1400	39,5-40,5 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	400	7,0-11,0 cm ³ /1000 strokes		2,5 (3,0)
1.5 Full-speed regulation	2400	17,0-23,0 cm ³ /1000 strokes		
1.6 Start	100	min. 52,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1400			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	1000 2,6-3,4 (2,3-3,7)	1400 (3,9-5,3)	2000 6,7-7,5 (6,4-7,8)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	1000 3,8-4,5		2000 6,5-7,1
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)		2250 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550 2400 2200 2100 1400 1000	max. 2,0 (16,0-24,0) 32,8-34,8 (31,5-36,1) 33,8-35,8 (32,5-37,1) (37,7-42,3) 36,8-39,8 (35,3-41,3)	
switch-off	2500	0	
Idle stop	650 400	max. 5,0 (5,0-13,0)	
End stop	320 430	min. 45,0 max. 45,0	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,4-1,6
SVS	max. 3,6
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage test voltage xxxxxxx rated voltage 12V.
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Test Oil ISO 4713

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/12 F 1100 R 159-8

Overflow temperature 45° C

0 460 426 050

DHK: 1 688 901 016/207+3 bar

superseded 8.84

company Cummins

engine: 6 BT - 590

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,3 mm \pm 0,02 (0,04)

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	750	3,1-3,5 mm		
1.2 Supply-pump pressure	750	3,7-4,3 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	900	73,0-74,0 cm ³ /1000 strokes		4,0 (4,5)
1.4 Idle regulation	375	18,5-24,5 cm ³ /1000 strokes		3,5 (4,5)
1.5 Full-speed regulation	1175	28,0-34,0 cm ³ /1000 strokes		
1.6 Start	100	min. 97,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	400 0,3-1,1 (0-1,4)	750 (2,6-4,0)	1100 5,4-6,2 (5,1-6,5)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	400 2,2-2,8		1100 5,2-5,8
Overflow delivery	n = rev/min cm ³ /10 s	400 55-138 (40-153)		1100 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1250 1175 1100 900 750 400	max. 1,5 (26,0-36,0) 66,0-69,0 (64,5-70,5) (70,5-76,5) 74,5-78,5 (72,8-80,2) 89,0-93,0 (87,3-94,7)	
switch-off			
ELAB	375	0	
Idle stop	300 375 450 130 200	47,0-55,0 (46,0-56,0) (16,5-26,5) max. 1,5 min. 97 max. 90	

3. Dimensions

(for assembly
and adjustment
mm)

Designation	
K	-
KF	5,1-5,3
MS	1,4-1,6
SVS	1,2
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage xxx min. 10 V rated voltage 12V.
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Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 PEU 1,9 b

5. Edition

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100

VE 4/9 F 2300 R 162

0 460 494 153

Overflow temperature 45° C

 1.85
 superseded Peugeot
 company XUD 9
 engine:

 DHK: 1 688 901 022/130 bar Test pressure line
 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/...

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	3,2-3,6 mm		
1.2 Supply-pump pressure	1250	3,9-4,5 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	- cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1250	29,5-30,5 cm ³ /1000 strokes		2,5 (3,0)
1.4 Idle regulation	A 550	2,5-3,5 cm ³ /1000 strokes		B 2,0 (3,0)
1.5 Full-speed regulation	2400	20,0-26,0 cm ³ /1000 strokes		
1.6 Start	100	min. 44,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1250	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	700 0,2-1,0 (0-1,3)	1250 (2,7-4,1)	2000 7,5-8,3 (7,2-8,6)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	700 2,3-2,9	2000 5,9-6,5	
Overflow delivery	n = rev/min cm ³ /10 s	500 41-83 (26-98)	2300 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2650 2500 2400 2250 2000 1250 700	max. 7,0 11,5-17,5 (10,5-18,5) (19,0-27,0) 30,0-32,0 (28,8-33,2) 30,5-32,5 (29,3-33,7) (27,8-32,2) 29,5-32,5 (28,0-34,0)	
switch-off	2300	0	
Idle stop	A 550 B 375 C 470	2,5-3,5 8,5-10,5 (5,5-13,5) 8,0-10,5 (5,5-13,0)	
End stop	200 300	min. 40,0 max. 35,0	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 V	
	rated voltage	xxx rated voltage 12 V.	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-6,0
MS	1,3-1,5
SVS	3,0
A	
B	

Observations

 * Residual delivery
 setting Idle set-
 ting (LFG) as per
 VDT-I-460/135

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 6/11 F 1900 L 178
0 460 416 035

Overflow temperature 45° C

supersedes
company: Motori-VM
engine: HR 692 HTJ/9

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test instructions and Test Equipment

Pre-stroke setting 0,2 mm $\pm 0,02 (0,04)$

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	3,8-4,2 mm	0,75	
1.2 Supply-pump pressure	1500	4,9-5,5 bar (kgf/cm ²)	0,75	
1.3 Full-load delivery with charge-air pressure	1500	59,0-60,0 cm ³ /1000 strokes	0,75	3,5 (4,0)
Full-load delivery without charge-air pressure	600	42,0-43,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	20,0-24,0 cm ³ /1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	2000	44,0-50,0 cm ³ /1000 strokes	0,75	
1.6 Start	100	min. 40,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,75 bar	n = rev/min mm	1000 0,9-1,7 (0,6-2,0)	1500 (3,3-4,7)	1850 5,6-6,4 (5,3-6,7)
2.2 Supply pump LDA=0,75 bar	n = rev/min bar (kgf/cm ²)	600 2,0-2,6	1850 6,0-6,6	
Overflow delivery LDA=0,75 bar	n = rev/min cm ³ /10 s	600 41-83 (26-98)	1900 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2130	1,0-9,0 (0,5-9,5)	0,75
	2000	(42,5-51,5)	0,75
	1850	55,0-57,6 (53,6-60,0)	0,75
	1500	(56,8-62,2)	0,75
	600*	46,0-47,0 (43,1-49,9)	0,30
	600	(39,1-45,9)	0
switch-off			
Idle stop	350	(17,5-26,5)	
	400	7,5-12,5 (5,5-14,5)	
	450	max. 4,0	
	End stop	min. 49	
	500	max. 44	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	6,4-6,6
MS	0,9-1,1
SVS	4,3
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,0 mm

2.4 Solenoid max. cut-in voltage xxx min. 10 Volt
rated voltage 12V.

Test Specifications Distributor-type Fuel-injection Pumps

Testoil-ISO 4113

 VE 4/9 F 2075 R 180
 0 460 494 158

Overflow temperature 45° C

 supersedes
 company: PSA-Peugeot
 engine: XD 3 T

 DHX: 1688 901 022 / Test pressure line
 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-Injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting — mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,3-5,7 mm	0,8	
1.2 Supply-pump pressure	1500	5,2-5,8 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	57,0-58,0 cm ³ /1000 strokes	0,8	2,5 (3,0)
Full-load delivery without charge-air pressure	500	42,0-43,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	7,0-11,0 cm ³ /1000 strokes	0	2,0 (3,0)
1.5 Full-speed regulation	2300	31,0-37,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 65 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1500	—		

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA = 0,8 bar	n = rev/min mm	750 0,9-1,7 (0,6-2,0)	1500 (4,8-6,2)	2000 7,9-8,7 (7,6-9,0)
2.2 Supply pump LDA = 0,8 bar	n = rev/min bar (kgf/cm ²)	200 1,1-1,7	750 3,1-3,7	2000 6,6-7,2
Overflow delivery	n = rev/min cm ³ /10 s	500 55-138 (40-153)	2075 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2600	max. 3,0	0,8
	2300	(30,0-38,0)	0,8
	2200	42,0-50,0 (42,0-50,0)	0,8
	2000	53,5-56,5 (52,8-57,2)	0,8
	1500	(55,3-59,7)	0,8
	1000	54,0-57,0 (53,3-57,7)	0,8
	750*	49,0-50,0 (46,5-52,5)	0,3
	500	(39,5-45,5)	0
switch-off			
Idle stop	400	(5,0-13,0)	
	500	max. 3,0	
End stop	260	min. 60	
	360	max. 60	
2.4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

 for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,4-5,7
MS	1,2-1,4
SVS	4,6
A	
B	

Observations

 Manifold-pressure
compensator stroke
= 7,5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

Testoil-ISO 4113

VE 4/9 F 2100 L 184

Overflow temperature 45° C

0 460 494 163

Test pressure line

DHK: 1 688 901 022/130 bar: 6x2x450/1 680 750 073

 superseded
 company: Fiat
 engine: X 8/49

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	5,4- 5,8 mm	0,8	
1.2 Supply-pump pressure	1500	6,1- 6,7 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	45,3-46,3 cm ³ /1000 strokes	0,8	2,5
Full-load delivery without charge-air pressure	800	37,8-38,8 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	8,0-12,0 cm ³ /1000 strokes	0	2,5
1.5 Full-speed regulation	2400	15,0-21,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 57,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1500	-	0,8	

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	800	1500	2000
LDA=0,8 bar	mm	1,7-2,5 (1,4-2,8)	(4,9-6,3)	7,6-8,4 (7,3-8,7)
2.2 Supply pump	n = rev/min	400	800	2000
LDA=0,8 bar	bar (kgf/cm ²)	2,8-3,4	4,1-4,7	7,5-8,1
Overflow delivery	n = rev/min	600	2100 (0,8 bar)	
	cm ³ /10 s	41-83 (26-98)	55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550	max. 5,0	0,8
	2400	(14,0-22,0)	0,8
	2300	29,0-36,0 (28,5-36,5)	0,8
	2100	45,5-48,5 (44,8-49,2)	0,8
	1500	(43,6-48,0)	0,8
	800 *	43,5-44,5 (41,0-47,0)	0,45
	800	37,8-38,5 (35,3-41,3)	0
	600	39,5-41,5 (37,5-43,5)	0
switch-off			
Idle stop	350	(6,0-14,0)	
	400	2,0-8,0 (1,0- 9,0)	
	500	max. 1,5	
	End stop	min. 55	
	500	max. 45	

2.4 Solenoid	max. cut-in voltage
	test voltage

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2 - 3,4
KF	5,7 - 6,0
MS	1,4 - 1,6
SVS	5,4
A	
B	

Observations

 * Manifold-pressure
 compensator stroke
 = 4,5 mm

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 VW 1,6 W 11

1. Edition

En

VE 4/9 F 2250 R 186
0 460 494 162

Overflow temperature 45° C

supersedes
company: VW
engine: 086T

Testoil-ISO 4-113

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting — mm

see VDT-W-460/.

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1250	2,9 - 3,3 mm	0,75	
	1250	4,0 - 4,6	0,75	
1.2 Supply-pump pressure	1500	43,5 - 44,5 bar (kgf/cm ²)	0,75	max. 2,5
1.3 Full-load delivery with charge-air pressure	600	23,0 - 24,0 cm ³ /1000 strokes	0	
Full-load delivery without charge-air pressure	475	6,0 - 10,0 cm ³ /1000 strokes	0	max. 2,0
1.4 Idle regulation	2525	9,0 - 15,0 cm ³ /1000 strokes	0,75	
1.5 Full-speed regulation	100	min. 35,0 cm ³ /1000 strokes	0	
1.6 Start	1250	-	0	
1.7 Load-dependent port-closing				

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	1250	2250
LDA=0,75 bar	mm	(2,4-3,8)	6,1-6,9(5,8-7,2)
2.2 Supply pump	n = rev/min	600	2250
LDA=0,75 bar	bar (kgf/cm ²)	2,5-3,1	6,5-7,1
Overflow delivery	n = rev/min	600 (0 bar)	2250 (0,75 bar)
	cm ³ /10 s	55-138(40-153)	55-138(40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2750	max. 3,0	0,75
	2525	(8,0-16,0)	0,75
	2250	38,0-40,0 (36,8-41,2)	0,75
	1500	(41,8-46,2)	0,75
	1000*	33,0-34,0 (31,3-35,7)	0,30
	600	31,5-34,5 (30,0-36,0)	0,75
	600	(20,5-26,5)	0
switch-off			
elektr.	400	0	
Idle stop	475	(4,0-12,0)	
	1250	max. 4,0	
End stop	400	min. 21	
stop	500	max. 29	
2.4 Solenoid	max. cut-in voltage	xxx min. 10 Volt	
	test voltage	rated voltage 12V.	
	XXXXXXXXXX		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,2-1,4
SVS	3,7
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 4,5 mm

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Test Specifications Distributor-type Fuel-injection Pumps

WPP 001/4 VOL 3,0 r

1. Edition

En

VE 4//11 F 1300 L 191
0 460 414 017

Overflow temperature 45° C

supersedes
company: Volvo-Penta
engine: TD 30 WK

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/.

Testoil-ISO 4113

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1100	1,2-1,6 mm	0,8	
1.2 Supply-pump pressure	1100	5,1-5,7 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1100	62,0-63,0 cm ³ /1000 strokes	0,8	3,5 (4,0)
Full-load delivery without charge-air pressure	600	41,5-42,5 cm ³ /1000 strokes	0	
1.4 Idle regulation	350	13,0-17,0 cm ³ /1000 strokes	0	3,5 (4,0)
1.5 Full-speed regulation	1350	34,5-40,5 cm ³ /1000 strokes	0,8	
1.6 Start	100	min. 65 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device DA = 0,8 bar	n = rev/min mm	900 0,2-0,8 (0-1,2)	1100 (0,7-2,1)	1300 2,0-2,6 (1,6-3,0)
2.2 Supply pump DA = 0,8 bar	n = rev/min bar (kgf/cm ²)	500 2,8-3,4		1300 5,8-6,4
Overflow delivery DA = 0,8 bar	n = rev/min cm ³ /10 s	500 55-138 (40-153)		1300 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1460	max. 2,0	0,8
	1350	(33,0-42,0)	0,8
	1250	60,5-63,5	0,8
	1100	(59,3-64,7)	0,8
	1100	(59,8-65,2)	0,8
	1100	50,5-53,5	0
	600*	(49,3-54,7)	0
	600	45,5-46,5	0,3
	600	(42,6-49,4)	0,3
	600	(38,6-45,4)	0
switch-off			
Idle stop	350	(10,5-19,5)	
	380	5,5-11,5	
	420	(4,0-13,0)	
End stop	350	min. 53	
	450	max. 48	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	-
KF	5,7-5,9
MS	1,2-1,4
SVS	4,0
A	
B	

Observations

* Manifold-pressure
compensator stroke
= 6,2 mm

2.4 Solenoid	max. cut-in voltage test voltage
--------------	-------------------------------------

⑥

Test Specifications

Distributor-type

Fuel-injection Pumps

46

WPP 001/4 FIA 1,7 h 1

1. Edition

En

VE 4/10 F 2050 R 192

0 460 404 040

Overflow temperature 45°C

supersedes

company Fiat

engine 8144.91.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting 0,2 mm \pm 0,02 (0,04)

see VDT-W-460/

1. Settings	Rot speed rev/min	Settings	Charge-air press bar (kgf/cm ²)	Difference in delivery cm ³
1 1 Timing device travel	1500	5,3-5,7 mm	0,8	
1 2 Supply pump pressure	1500	6,1-6,7 bar (kgf/cm ²)	0,8	
1 3 Full-load delivery without charge-air pressure	1500	57,5-58,5 cm ³ /1000 strokes	0,8	3,0
Full-load delivery with charge-air pressure	600	42,5-43,5 cm ³ /1000 strokes	0	
1 4 Idle speed regulation	400	16,0-20,0 cm ³ /1000 strokes	0	3,0
1 5 Start	2250	34,5-40,5 cm ³ /1000 strokes	0,8	
1 6 Full-load speed regulation	100	44,0-64,0 cm ³ /1000 strokes	0	
1 7 Load-dependent start of delivery	1500	-	0,8	

2. Test Specifications

checking values in brackets ()

2 1 Timing device LDA=0,8 bar	n = rev/min mm	600 1,1-1,9 (0,8-2,2)	1500 (4,8-6,2)	2050 7,6-8,4 (7,3-8,7)
2 2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	400 3,4-4,0	600 4,0-4,6	2050 7,4-8,0
Overflow delivery LDA=0,8 bar	n = rev/min cm ³ /10 s	600 55-138 (40-153)	2050 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press bar (kgf/cm ²)
End stop	2400	max. 3,0	0,8
	2350	1,5-8,5 (1,0-9,0)	0,8
	2250	(33,5-41,5)	0,8
	2050	48,5-51,5 (47,8-52,2)	0,8
	1500	(55,8-60,2)	0,8
	800*	52,5-53,5 (50,0-56,0)	0,3
	600	58,0-61,0 (56,5-62,2)	0,8
	600	(40,8-45,2)	0
switch-off			
Idle stop	400	(14,0-22,0)	
	500	1,0-7,0 (0-8,0)	
	600	max. 4,0	
End stop	450	max. 47,0	
2.4 Solenoid	cut-in voltage XXX min 10 V rated voltage 12 V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	
KF	5,8
MS	1,3
SVS	2,2
A	
B	

Observations

* LDA-stroke 4,5 mm

G19

C19

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3.85

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 FIA 1,7 h2

1. Edition

En

Testoil-ISO 4113

VE 6/11 F 1500 R 196

0 460 416 042

DHK: 1 688 901 020/172 + 3 bar

Overflow temperature 45° C

supersedes

company:

engine:

Fiat-Iveco
8060.05.200

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

=

mm

see VDT-W-460/..

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1000	3,8- 4,2 mm		
1.2 Supply-pump pressure	1000	5,4- 6,0 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1000	68,7-69,7 cm ³ /1000 strokes		3,5
1.4 Idle regulation	425	8,0-12,0 cm ³ /1000 strokes		4,0
1.5 Full-speed regulation	1600	45,0-51,0 cm ³ /1000 strokes		
1.6 Start	100	min. 76,0 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	-			

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min	700	1000	1300	1500
	mm	1,1-1,9 (0,8-2,2)	(3,3-4,7)	6,3-6,9 (5,9-7,3)	7,1-7,9 (6,8-8,2)
2.2 Supply pump	n = rev/min	200	700	1500	
	bar (kgf/cm ²)	1,5-2,1	4,2-4,8	7,2-7,8	
Overflow delivery	n = rev/min	600		1500	
	cm ³ /10 s	41-83 (26-98)		55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	1730 1650 1600 1500 1000 600	max. 2,0 34,5-41,5 (33,5-42,5) (43,5-52,5) 64,5-67,5 (63,3-68,7) (66,5-71,9) 57,0-60,0 (55,1-61,9)	
switch-off			
Idle stop	425 500	max. 2,0 (5,5-14,5)	
End stop	200 300	min. 80 max. 32	
2.4 Solenoid	max. cut-in voltage test voltage		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,9-2,1
SVS	
A	
B	
Observations	
Pulling electro- magnet 24 V	

⑥

Test Specifications Distributor-type Fuel-injection Pumps

46

WPP 001/4 VMA 2,0 f

1. Edition

En

Testoil-ISO 4113

 VE 4/9 F 2150 L 202
 O 460 494 167

Overflow temperature 45° C

 superseded
 company: Motori VM
 engine: HR 488 HJ

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre-stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1600	4,7-5,1 mm	0,8	
1.2 Supply-pump pressure	1600	4,9-5,5 bar (kgf/cm ²)	0,8	
1.3 Full-load delivery with charge-air pressure	1500	48,5-49,5 cm ³ /1000 strokes	0,8	2,5
Full-load delivery without charge-air pressure	750	36,0-37,0 cm ³ /1000 strokes	0	
1.4 Idle regulation	400	11,0-15,0 cm ³ /1000 strokes	0	2,5
1.5 Full-speed regulation	2420	12,0-18,0 cm ³ /1000 strokes	0,8	
1.6 Start	100	34,0-50,0 cm ³ /1000 strokes	0	
1.7 Load-dependent port-closing	1600	-	0,8	

2. Test Specifications

checking values in brackets ()

2.1 Timing device LDA=0,8 bar	n = rev/min mm	1000 1,3-2,1 (1,0-2,4)	1600 (4,2-5,6)	2150 7,6-8,4 (7,3-8,7)
2.2 Supply pump LDA=0,8 bar	n = rev/min bar (kgf/cm ²)	600 1,5-2,1	1000 2,8-3,4	2150 6,7-7,3
Overflow delivery LDA= 0,8 bar	n = rev/min cm ³ /10 s	600 41-83 (26-98)	2150 55-138 (40-153)	

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2550	max. 2,0	0,8
	2420	(11,0-19,0)	0,8
	2270	30,5-37,5 (30,0-38,0)	0,8
	2150	39,0-42,0 (36,5-44,5)	0,8
	1500	(46,8-51,2)	0,8
	750	49,0-52,0 (47,5-53,5)	0,8
	750*	45,5-46,5 (43,0-49,0)	0,4
	750	(33,5-39,5)	0
switch-off			
Idle stop	400	(9,0-17,0)	
	500	2,0-8,0 (1,0-9,0)	
	700	max. 4,0	
End stop	400	min. 36	
	500	max. 37	
2.4 Solenoid	max. cut-in voltage xxx min. 10.V rated voltage 12V.		

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,2-5,4
MS	0,7-0,9
SVS	3,2
A	
B	

Observations

 * Manifold-pressure
 compensator stroke
 = 6,4 mm

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3.85

G21

Test Specifications

Distributor-type

Fuel-injection Pumps

WPP 001/4 FIA 1,7 h3

1. Edition

En

Testoil-ISO 4113

VE 4/9 F 2300 R 207

Overflow temperature 45° C

0 460 494 170

 supersedes
 company:
 engine:

 Fiat
 X 8/34

 DHK: 1 688 901 022/130 bar Test pressure line
 6x2x450/1 680 750 073

All test specifications are valid only for Bosch Fuel-injection Pump Test Benches and Testers

Test Instructions and Test Equipment

Pre stroke setting

mm

see VDT-W-460/

1. Settings	Rot. speed rev/min	Settings	Charge-air press. bar (kgf/cm ²)	Difference in delivery cm ³
1.1 Timing device travel	1500	4,1- 4,5 mm		
1.2 Supply-pump pressure	1500	5,3- 5,9 bar (kgf/cm ²)		
1.3 Full-load delivery with charge-air pressure	-	cm ³ /1000 strokes		
Full-load delivery without charge-air pressure	1500	29,5-30,5 cm ³ /1000 strokes		2,5
1.4 Idle regulation	380	10,0-14,0 cm ³ /1000 strokes		2,5
1.5 Full-speed regulation	2450	19,0-25,0 cm ³ /1000 strokes		
1.6 Start	100	min. 55 cm ³ /1000 strokes		
1.7 Load-dependent port-closing	1500	-		

2. Test Specifications

checking values in brackets ()

2.1 Timing device	n = rev/min mm	800 1,6-2,4 (1,3-2,7)	1500 (3,6-5,0)	2300 7,0-7,8 (6,7-8,1)
2.2 Supply pump	n = rev/min bar (kgf/cm ²)	600 3,1-3,7		2300 7,2-7,8
Overflow delivery	n = rev/min cm ³ /10 s	600 41-86 (26-98)		2300 55-138 (40-153)

2.3 Fuel deliveries

Speed control lever	Rot. speed rev/min	Fuel delivery cm ³ /1000 strokes	Charge-air press. bar (kgf/cm ²)
End stop	2900 2650 2450 2300 1500 1000 600	max. 1,5 2,0-9,0 (1,5-9,5) (18,0-26,0) 31,8-34,2 (30,8-35,2) (27,8-32,3) 28,8-31,2 (27,8-32,2) 30,0-33,0 (28,5-34,5)	
switch-off			
Idle stop	380 400 500	(8,0-16,0) 5,0-11,0 (4,0-12,0) max. 1,5	
End stop	300 400	min. 48 max. 45	

3. Dimensions

for assembly
and adjustment
mm

Designation	
K	3,2-3,4
KF	5,7-5,9
MS	1,7-1,9
SVS	2,8
A	
B	

Observations

2.4 Solenoid	max. cut-in voltage test voltage XXXXXXXXXX	xxx min. 10 Volt rated voltage 12V.
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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 5,7 o

8. Edition

En

PES 6 A 90 D 410 RS 2293 Z RSV 575-1250 A 1 B 618 L
A 1 C 618 L

Komb.-Nr. 0 400 876 195

supersedes 4.83

company Daimler-Benz
engine OM 352 A
107 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,15-2,25
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1230	11,2±0,1	7,5 - 7,6	0,3 (0,45)			
575	6,1-6,3	1,0 - 1,6	0,2 (0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control lever deflection in degrees rev/min 7 8 9			3 Torque control rev/min Control rod travel mm 10 11	
lose	800	0,3-1,0	-	-	-	ca. 33	575	6,2	-	-
	x = 5,0						575	6,1-6,3		
ca. 65	10,2	1260-1270					600-630	= 2,0		
2a	4,0	1295-1315						**		
	1350	0,3-1,7								

The numbers denote the sequence of the tests. Set idle-speed auxiliary spring at 2 mm control-rod travel.

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes 4 5		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes 6 7		4a Idle stop rev/min Control rod travel mm 8 9	
1230	74,5 - 75,5 (72,5 - 77,5)	1260-1270 *	-	-	-	100	78,0-88,0 (75,0-91,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

2.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 FIA 2,6 d

1. Edition

En

BR-PES 3 A 90 D 410 RS 2317

BR-EP/RSV 325-1200 A 1 B 1015 L

supersedes
company Fiat
engine 31/1005

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{2,15-2,25}
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9,0	5,9 - 6,4	0,4			
1000	6,0	2,7 - 3,5				
1000	15,0	13,3 - 14,3				
200	9,0	2,8 - 4,0				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control-lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
ca. 64	1200	16,0	without auxiliary spring			ca. 23	325	6,5	1180	0
	1250	10,2					100	19 - 21	500	0
	1290	6,0					325	6,3 - 6,7	400	1,2 - 1,8
2a	1270	7,0-9,6	with auxiliary spring				400	2,6 - 4,4		
	1300	3,6-6,2					450	1,0 - 3,4		
	1350	1,0-3,6					550	0 - 1,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min				Idle		Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	4	cm ³ /1000 strokes 5	6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	mm 10
1180	74,0 - 76,0 (72,0 - 78,0)	1210-1230*	-	-	100	min. 130	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 6,0 h 3

2. Edition

En

PE6A85D412RS2303

RQV250-1400AB 1091L

Komb.-Nr. 0 400 050 154

superseded 80

company STEYR

engine: WD 612-60

Testoil-ISO 4113

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,45-2,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,3-11,4	7,6 - 7,7	0,3(0,45)			
250	8,4-8,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1400	15,2-17,8	-	-	-	ca. 11	100 250	min. 7,6 5,9-6,1	250 490	0,8 2,5-2,7
ca. 45	10,3	1440-1450					350-410	=2,0	1450	8,3
	4,0	1540-1570					500	max. 1,0		
	1700	0 - 1,0				③a				

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②a	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9-0,1
LDA	0,7 bar		LDA	0,7 bar	100	142,0-152,0 (139,0-155,0)	400	11,3
1400	76,5 - 77,5 (74,5 - 79,5)	1440-1450*	800	70,0 - 73,0 (68,0 - 75,0)			950	11,4
				0 bar			850	11,7
			500	55,5 - 58,5 (53,5 - 60,5)			500	11,9

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXXXX

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
2303 + 1091L	0,7		12,0 - 12,1	
		0,18	11,7 - 11,8	
		0,16	11,5 - 11,7	
		0	11,3 - 11,4	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Full-Load setting on governor; turn LDA adjusting screw 0.3...0.5 mm toward "increased" control-rod travel.

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 STE 6,0 h 2

2. Edition

En

Testoil-ISO 4113

PE 6 A 85 D 412 RS 2303
Komb.-Nr. 0 400 656 157

RQ 250/1400 AB 1099 L

supersedes 1.79

company: Steyr

engine: WD 612.60

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,50-2,60$
 $(2,45-2,65)$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	11,7+0,1	7,8 - 7,9	0,3(0,45)			
250		0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
650	15,5-16,4	650	16,0	10,7 3,0 1625	1445-1460 1530-1560 0 - 1,0	250	5,5	100 250 380-420 475	mind. 7,0 5,4-5,6 20=2,0 max. 1,0	1400 975 820 600	11,7-11,8 11,7-12,0 12,2-12,4 12,4-12,5

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 1400	0,7 bar 78,0 - 79,0 (76,0 - 81,0)			LDA 1000 LDA 500	0,7 bar 72,5 - 75,5 (70,5 - 77,5) 0 bar 60,0 - 63,0 (58,0 - 65,0)	100	142,0 - 152,0 (139,0 - 155,0)

Checking values in brackets

3.85

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D. Adjustment Test for Manifold Pressure Compensator

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
 increasing
 XXXXXXXX

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
2303 + 1099 L	0,70		12,4 - 12,5
		0,23	12,2 - 12,3
		0,20	12,0 - 12,2
		0	11,8 - 11,9

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 VIA 5,7 a

1. Edition

En

Testoil-ISO 4113

PES 6 A 85 D 320/3 RS 2339

RSV 350-1250 A 1 B 279 R

supersedes

Komb.-Nr. 0 400 866 029

A 1 C 279 R

company Motori VM

engine 106 SU, 956 SU

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (2,95-3,15)
3,00-3,10 RW9 mm (from BDC) FB.Diff. zw RW 9 mm RW max. = 6,0-7,0°

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
750	9,7-9,8	5,3 - 5,4	0,3(0,45)			
350	7,3-7,5	1,0 - 1,6	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 2,75	-	-	-	ca. 16	350	5,5	1250	9,7-9,8
ca. 58 (2a)	1290-1300=8,7 1300-1330=4,0 1465=0,3-1,7						100	min. 19	400	10,8-11,4
							350	5,9-6,1	500	9,7-9,9
							500	max. 1,0		
							405-465	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to 1 rev/min							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9	
750	53,5 - 54,5 (51,5 - 56,5)	1290-1300*	-	-	100	10,0-13,0 = 19,0 - 21,0 mm RW	1250	9,7-9,8	
							500	9,7-9,9	
							400	10,8-11,4	

Checking values in brackets

* 1 mm less control rod travel than col 2

4.85

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H5

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 7,4 a 1

1. Edition

En

Testoil-ISO 4113

PES 6 A 90 D 410 RS 2340 RQV 275-1200 AB 972 L (1)
250-1300 AB 961 DL (2)

supersedes

company OM Brescia

engine: CP3/100-136PS
CP3/130

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
($2,10-2,30$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes (1) 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes (2) 3	Spring pre-tensioning (torque-control valve) mm min. ⁻¹ 6
1200	10,9+0,1	7,6 - 7,7	0,3(0,45)	10,3-10,4	7,4 - 7,6	-n 1300
275	8,0-8,2	0,7 - 1,1	0,2(0,4)	7,8-8,0	0,9 - 1,5	-n 250

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

275-1200 AB 972L

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1250	15,0-18,0	-	-	-	ca. 16	100 275 530-600=2,0	min. 9,7 8,0-8,2	300 800 1260	0,8-1,8 3,8-4,2 8,2
ca. 64	9,9 4,0 1450	1240-1250 1325-1335 0 - 1,0				3a	300-600			

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes mm RW 7	rev/min 8	Control rod travel mm 9
1200	75,5 - 76,5 (73,5 - 78,5)	1240-1250*	-	-	100	14,7-15,3	-	-
					100-195 (80-215)			

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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H6

B. Governor Settings

..AB 961 DL

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1340	15,2-17,8	-	-	-	ca.21	100	min.11,5	200	0,4-1,5
							250	9,9-10,1	600	3,5-4,0
							790-850=2,0		1350	8,2
ca.61	9,3	1340-1350					1050	0 - 1		
	4,0	1430-1460					250-650			
	1550	0 - 1,0				(3a)				

Torque control travel a 0,2 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
1300	74,5 - 75,5 (72,5 - 77,5)	1350-1350*	1100	74,0 - 76,0 (72,0 - 78,0)	100	109,25 - 119,25	1300	10,8-10,4	
			500	61,5 - 63,5 (59,5 - 65,5)	100-170 (80-190)		500	10,5-10,6	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Testoil-ISO 4113**B. Governor Settings**

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
						(3a)				

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery Control rod stop Test oil temp 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control travel	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	

Checking values in brackets

* 1 mm less control rod travel than col. 2

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 4 A 80 D 410 RS2346

EP/RS 325-1400 A0 B699DL

AO C 699 DL

supersedes 76

company K H D

engine F 4 L 913

(87 PS)

Komb.-Nr. 0 400 864 034

Test RS governor according to WPP 001/4, KHD 1 c

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke **1,9 + 0,1** mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	9	3,1 - 3,5	0,4			
	6	0,1 - 0,6				
200	9	0,6 - 1,3				

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel Torque control travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
VHca.73 FH max.	1400	15,8-16,5	-	-	-		325	8,3	1380	0
	1450	11,9-13,3					300	8,4-9,1	1200	0,4-0,6
	1500	7,7-9,8					400	6,0-6,8	1050	0,9-1,1
	1550	2,8-5,8					500	3,5-4,2	900	1,2-1,4
	1610	0,3-1,0					1400	2,2-2,8	550	1,2-1,4
							1470	0		

Torque control travel a : mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp 40°C (104°F)		Rotational-speed limitation	Fuel delivery characteristics		Starting fuel delivery Idle switching point		Intermediate rotational speed Torque-control travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
1400	69,0 - 70,0 (67,5-71,5)	1420	800	62,0 - 65,0 (60,5-66,5)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 KHD 6,1 a 1

4. Edition

En

PES 6 A 85 D 410/3 RS 2415

RS 325/1325 AOB 691 DL,702DL superseded 3.83
AOB 691 DL,709DL company: KHD

Test RS governor according to WPP 001/4, KHD 1 c

engine: BF6 L 913
110 kW (150 PS)
2650 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,9-2,0}{(1,85-2,05)}$ mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1325	12,0+0,1	8,7 - 8,8	0,3(0,45)			
325	8,2-8,4	1,4 - 2,0	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			④ Lower rated speed			③ Torque control	
Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3- 0,7	-	-	-		325	6,5	1325	12,0+0,1
	X =	7,0					100	min.16,0	500	12,5+0,2
							325	6,4-6,6	1060	12,1+0,2
ca.68	11,0	1355-1365					500	3,4-4,0		
⑤	4,0	1450-1480					1330-1370	2,0		
	1600	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

② Full-load stop		⑥ Rotational-speed limitat.		③a Fuel delivery characteristics		Starting fuel delivery idle		⑤a Idle stop	
Test oil temp. 40°C (104°F)		Note: changed to ... rev/min							
rev/min	cm ³ /1000 strokes	rev/min		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3		4	5	6	7	8	9
LDA	0,7 bar	1355-1365*		LDA	0 bar	100	15,0-16,0	-	-
1325	86,5-87,5 (84,5-89,5)			500	56,0-58,0 (53,5-60,5)		mm RW		
				LDA	0,7 bar				
				800	76,5-78,5 (74,0-81,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

KHD 6,1 a 1 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PES 6 A..RS 2415 + ..AOB 691 DL + ..AOB 709 DL	0,27	0,70 0,37 0	11,6 - 11,8 12,5 - 12,7 12,2 - 12,3 11,3 - 11,5

Notes.

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

40

WPP 001/4 KHD 6,1 a 2

3. Edition

En

PES 6 A 85 D 410/3 RS 2415 RQV 750 A B 1004 L

Komb.-Nr. 0 400 836 016

superseded 9.82

company KHD

engine 6 L 913

kW /

1500 min⁻¹

A power output -

10% above rated output

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,90-2,00$
($1,85-2,05$) mm (from BDC) RW=9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
720	$12,3^{+0,1}$	8,4 - 8,5	0,3(0,45)			

Adjust the fuel delivery from each outlet according to the values in .

Testoil-ISO 4113

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min 2	Control rod travel mm 3	①a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	③	rev/min 10	mm 11
ca. 25	$11,3$ $4,0$ 820	760-765 789-799 0-1,0		-	-	-		-	-	-		-	-

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
720	84,0-85,0 (82,0-87,0)	760-765*	-	-	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 KHD 15,8 c 2

1. Edition

En

PE 10 A 95 D 610/4 LS 2452

RQV 300-1150 AB 988 DL

supersedes

Komb.-Nr. 0 400 649 188

compares KHD

1-10- 9- 4- 3 - 6 - 5 - 8 - 7 - 2

engine: F 10 L 413 F

0-27-72-99-144-171-216-243-288-315° ± 0,5° (± 0,75°)

216 kW/2300 min⁻¹

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,0-2,1$
(1,95-2,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	9,2-9,3	8,5-8,7	0,3 (0,6)			
300	5,9-6,1	0,9-1,4	0,3 (0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm/rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 7,5	250	0,5-0,7
ca. 65	8,2	1190-1200					300	5,9-6,1	550	2,9-3,1
	4,0	1225-1255					550-610	= 2,0	850	4,8-5,0
	1350	0-1,0				300-450	750	max. 1,0	1150	7,9

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limits/intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑧	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1150	84,5-86,5 (82,5-88,5)	1190-1200*	700	83,0-86,0 (80,5-88,5)	100	13,2-14,2 mm RW	1150	9,2-9,3
			400	75,0-79,0 (72,5-81,5)			1000	9,4-9,6
							700	9,7-9,8

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 9,2 e 3
2. Edition

En

PES 5 A 95 D 410 LS 2488 y RQV 250-1100 AB 850 DL

Komb.-Nr. 0 400 845 041

1-3-5-4-2 je $72^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

superseded by 84
company MAN
D 2565 MEFV
engine: Saviem
137 kW/2200 min⁻¹
MAN-Nr. 1-7841

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $1,5-1,6$
(1,45-1,65) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	11,0+0,1	11,8-12,0	0,3(0,6)			
250	5,7-5,9	1,4-1,9	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	14,4-17,6	-	-	-	ca. 13	100	min. 7,4	200	0,7-0,9
ca. 42	10,0	1140-1150					250	5,7-5,9	500	3,5-3,8
	4,0	1175-1205					315-375	2,0	800	5,0-5,4
	1350	0 - 1,0					450 max.	1,0	1100	7,7

Torque control travel a = 0,4 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	117,5-119,5 (115,5-121,5)	1140-1150*	750	114,5-118,5 (112,5-120,5)	100	13,7-14,3 mm RW	1100	11,0+0,1
			500	111,5-115,5 (109,5-117,5)	250	6,0 mm RW	750	11,3+0,2
							500	11,4+0,1

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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Testoil-ISO 4113

H13

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 d 1

3. Edition

En

Testoil-ISO 4113

PES 5 A 95 D 410 LS2488Z

RQ 250/1100 AB839DL

 superseded by
 company **MAN**

Komb.-Nr. 0 400 845 033

engine D 2565 MSFV,

1 - 3 - 5 - 4 - 2 je $72^{\circ} \pm 0,5^{\circ}$ ($\pm 0,75^{\circ}$)137 kW / 2200 min⁻¹

MAN-Nr. 1-7838

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $1,50-1,60$
 (1,45-1,65) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,0+0,1	11,7 - 11,9	0,3 (0,6)			
250	5,3-5,5	1,2 - 1,7	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full load speed regulation				Idle speed regulation				Torque control	
rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	Setting point rev/min	Control rod travel mm	Test specifications rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11	12
600	15,6-16,4	600	16,0	10,0	1145-1160	250	5,4	100	mind. 6,9	1100	11,0-11,1
				4,0	1175-1205			250	5,3-5,5	800	11,3-11,5
								320-360	= 2,0	500	11,5-11,6

Torque control travel on flyweight assembly dimension a 0,2 mm

Speed regulation At 1145-1160 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /100 strokes
1	2	3	4	5	6	7
1100	116,5 - 118,5 (114,5 - 120,5)		800	114,5 - 118,5 (112,5 - 120,5)	100	120,0-130,0 (117,0-133,0)
			500	111,5 - 115,5 (109,5 - 117,5)	250	= 13,5-14,5 mm RW 6,0 mm RW

Checking values in brackets

4.85

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MAN 9,2 e 2
2. Edition

En

PES 5 A 95 D 410 LS 2488 Z RQV 250-1100 AB 850 DL
Komb.-Nr. 0 400 845 034
1-3-5-4-2 je 72° ±0,5° (+75°)

supersedes 9184
company MAN
engine: D 2565 II/MF
124 kW/2200 min⁻¹
MAN-Nr. 1-7803

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,5-1,6 mm (from BDC)
(1,45-1,65)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	9,9+0,1	9,5-9,7	0,3(0,6)			
250	5,7-5,9	0,9-1,5	0,3(0,5)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1140 1200 1220 1300	14,4-17,6 4,0-10,6 0 - 8,0 0 - 1,0	-	-	-	ca. 13	100 200 300 410	7,5-10,2 5,7-8,5 2,5-5,3 0	200 500 800 100	0,7-0,9 3,5-3,8 5,0-5,4 7,7

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1100	94,5-96,5 (92,5-98,5)	1140-1150*	800 500	98,5-102,5 (96,5-104,5) 95,0-98,0 (93,0-100,0)	100 250	15,5-16,5 mm RW 6,0 mm RW	1140 550	0 4-0,6

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.05

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Testoil-ISO 4113

H15

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MAN 9,2 f

4. Edition

En

Testoil-ISO 4113

 PES 5 A 95 D 320 LS 2504
 LS 2504Z

 RQ 250/1100 AB 917 DR(1)
 RQ 250/1100 AB 968 DR(2)

supersede 5.84

company M A N

Komb.-Nr. 0 400 845 031 (1) MAN-Nr. 1-7756

0 400 845 032 (2) MAN-Nr. 1-7757

engine D 2565 MUL

141 kW/2200 min⁻¹(1)124 kW/2200 min⁻¹(2)1 - 3 - 5 - 4 - 2 = 0 - 72 - 144 - 216 - 288⁰ ± 0,5⁰ (± 0,75⁰)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

 Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque control valve) mm 6
1100	11,3+0,1	11,4 - 11,6	0,3(0,6)	10,1+0,1	9,6 - 9,8	
250	6,4-6,6	1,5 - 2,1	0,4(0,5)	5,9-6,1	0,8 - 1,4	

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

917DR (1)

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,3 4,0 1300	1145-1160 1175-1205 0 - 1,0	250	5,7	100 250 340- 450	mind. 7,2 5,6-5,8 400=2,0 max. 1,0	1100 800 500	11,3-11,4 11,5-11,7 11,7-11,8

Torque control travel on flyweight assembly dimension a = 0,2 mm

Speed regulation At 1145 - 1160 min⁻¹

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /100 strokes 7 mm RW
1100	114,0 - 116,0 (112,0 - 118,0)		800 500	111,0 - 115,0 (109,0 - 117,0) 108,5 - 112,5 (106,5 - 114,5)	100 250	13,7-14,3 6,5

Checking values in brackets

B. Governor Settings

968DR (2)

(2)

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	9,2 4,0 1250	1145-1160 1185-1215 0 - 1,0	250	6,0	100 250 350- 450	mind.7,5 5,9-6,1 410 =2,0 max.1,0	1100 1000 500	10,1-10,2 10,3-10,6 10,8-10,9

Torque control travel
on flyweight assembly dimension a =

0,4 mm

Speed regulation At 1145 - 1160

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm mm RW 7
1100	96,0 - 98,0 (94,0 - 100,0)			800	101,5 - 105,5 99,5 - 107,5	100	13,7-14,3
				500	94,5 - 98,5 (92,5 - 100,5)	250	6,0

Checking values in brackets

Testoil-ISO 4113**B. Governor Settings**

Checking of slider PRG check		Full load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		Setting point		Test specifications		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12

Torque control travel
on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control
rod travel**C. Settings for Fuel Injection Pump with Fitted Governor**

Full load delivery on governor control lever Test oil temp 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a		③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm mm RW 7

En Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MAN 12,8 e
4. Edition

En

Testoil-ISO 4113

PE 8 A 90 D 320 LS 2514 RQ 250/1250 AB992DR
250/1250 AB832DR

supersedes 82
company M A N
D 2538 M/MF
engine: 190 kW (256 PS)

1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{1,50-1,60}{(1,45-1,65)}$ mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5+0,1	10,2 - 10,3	0,3(0,45)			
250	7,4-7,6	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

.. 992DR

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Setting point		Test specifications		Setting point		Test specifications		Setting point		Test specifications	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	rev/min 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5 4,0	1295-1310 1400-1430	250	6,0	100 250 360 500	min. 7,5 5,9-6,1 400= 2,0 max. 1,0	1250 970 870 500	11,5-11,6 11,6-11,9 11,9-12,1 12,1-12,2

Torque-control travel on flyweight assembly dimension a = 0,25 mm Speed regulation: At 1295-1310 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1250	102,5 - 103,5 (100,5 - 105,5)	-	800	95,5 - 98,5 (93,5 - 100,5)	100	135 - 145
			500	90,0 - 94,0 (88,0 - 96,0)	250	7,5 mm RW

Checking values in brackets

3.85

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H18

B. Governor Settings

832DR

MAN 12,8 e -2-

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min. 7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
1250	15,6-16,0							360-420	2,0		
1500	0 - 1							500	0 - 1		

Torque control travel

on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /- 1000 strokes 2	rev/min 3	rev/min 4	cm ³ /- 1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7
1250	101,5 - 102,5 (99,5 - 104,5)		500	78,0 - 86,0 (76,0 - 88,0)	100	18,0 - 18,6
					250	7,0

Checking values in brackets

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check ①		Full-load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12

Torque control travel

on flyweight assembly dimension a =

mm

Speed regulation At

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery Idle speed ⑥	
rev/min 1	cm ³ /- 1000 strokes 2	rev/min 3	rev/min 4	cm ³ /- 1000 strokes 5	rev/min 6	cm ³ /1000 strokes / mm Control rod travel 7

En Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① WPP 001/4 MAN 16,0 d and Governors

8. Edition

En

Testoil-ISO 4113

PE10A90D520/5 LS 2515

RQV 250-1250 AB993DR

RQ 250/1250 AB832DR ./.

RQ 250/1250 AB992DR ./.

superseded 5.84

company MAN

engine: D 2530 MF

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2
 0 -45-72-117-144-189-216-261-288-333" $\pm 0,5^{\circ}(0,75^{\circ})$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(1,45-1,65)

mm (from BDC)

Zyl. 10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1250	11,5-11,6	10,1-10,3	0,3(0,45)	11,5-11,6	10,3-10,4	
250	9,0-9,2	0,9-1,5	0,2(0,4)	7,4-7,6	0,9-1,5	
800/500	- - -	C, 4-5 -	0,4(0,55)			

Adjust the fuel delivery from each outlet according to the values in
Testoil-ISO 4113

B. Governor Settings

RQV..993 DR

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
ca. 50	1275 1450	14,4-17,4 0 - 1	-	-	-	ca. 13	100 250 310-370 = 2,0 450	min. 7,2 5,6-5,8 0 - 1	200 700 270	0,5-1,2 4,4-4,8 8,3
ca. 48	10,5 4,0	1290-1300 1365-1395				③a				

Torque control travel a = 0,6 \pm 0,1 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1250	102,4-103,5 (100,5-105,5)	1290 - 1300*	800	95,5- 98,5 (93,5-100,5)	100	134,25-144,25	1250	11,5
			500	90,0- 94,0 (88,0- 96,0)	250	7,0 mm RW	900	12,0
					100-170 (80-190)		500	12,3
								./.

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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B. Governor Settings

Checking of slider PRG check ①		Full load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,1	100	min.7,6	-	-
				4,0	1345-1375			250	6,0-6,2		
1250	15,6-16,0							360-420	=2,0		
1500	0 - 1							500	0 - 1		

Torque control travel on flyweight assembly dimension a = 0 mm Speed regulation At 1295-1310 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
1250	101,5 - 102,5 (99,5 - 104,5)		500	78,0 - 86,0 (76,0 - 88,0)	100 250	129,25 - 139,25 7 mm RW

Checking values in brackets

B. Governor Settings

Checking of slider PRG check ①		Full load speed regulation ④				Idle speed regulation ⑤				Torque control ③	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	15,6-16,4	600	16,0	10,5	1295-1310	250	6,0	100	min.7,5	1250	11,5-11,6
				4,0	1365-1395			250	5,9-6,1	1000	11,8-12,0
				1500	0 - 1,0			360-400	=2,0	600	12,2-12,4
								500	0 - 1		

Torque control travel on flyweight assembly dimension a = 0,25 mm Speed regulation At 1295-1310 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full load delivery on governor control lever Test oil temp 40°C (104°F) ②		Control rod stop ③a	Fuel delivery characteristics ③b		Starting fuel delivery idle speed ⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
1250	102,5 - 103,5 (100,5 - 105,5)	-	800	95,5 - 98,5 (93,5 - 100,5)	100	135,0-145,0 (132,0-148,0) = 18,3-19,3 mm RW
			500	90,0 - 94,0 (88,0 - 96,0)	250	7,0 mm RW

En Checking values in brackets

Testoil-ISO 4113

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 OMB 4,6 a

1. Edition

En

PES 4 A 90 D 410 RS 2518 RQ 300/1200 AB 989 DL
Komb.-Nr. 0 400 844 069

supersedes -
company: OM-Brescia
engine: CO 3/110
62,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,15-2,25$
(2,10-2,30) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 5
1200	10,3+0,1	6,1 - 6,2	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Control rod travel mm 2		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		rev/min 11		Torque control Control rod travel mm 12	
600		15,6-16,4		600	16,0	9,3	1245-1260			300	6,0	100	min. 7,5	1200	10,3-10,4		
						4,0	1360-1390					300	5,9-6,1	710	10,4-10,7		
						1450	0 - 1,0					450	4,9-2,0	630	10,8-11,0		
												600	max. 1,0				

Torque-control travel
on flyweight assembly dimension a = 0,4 mm

Speed regulation: At 1245 - 1260 min⁻¹

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6		Control rod travel mm 7	
1200	60,5 - 61,5 (58,5 - 63,5)	500		900	55,5 - 58,5 (53,5 - 60,5)	100	117,0 - 123,0 (114,0 - 126,0)		
				500	58,5 - 61,5 (56,5 - 63,5)		=16,2 - 16,6 mm RW		
						300	9,0 - 15,0 (7,0 - 17,0)		

Checking values in brackets

3.85

Testoil-ISO 4113

BOSCH

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 OMB 4,6 c

1. Edition

En

PES 4 A 90 D 410 RS 2518 RQV 300-1400 AB 1018 L
Komb.-Nr. 0 400 844 072

supersedes -
company: OM-Brescia
engine: 8340.04.300
74 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1400	10,8+0,	7,0 - 7,1	0,3(0,45)			
300	7,9-8,	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1410	15,0-18,3	-	-	-	ca. 12	100	min. 7,9	250	0-1,0
ca. 66	9,8 4,0 1650	1440-1450 1500-1530 0-1,0				3a	300 600-760=2,0 950 max. 1,0	6,3-6,5 2,0 1,0	630 1020 1400	2,3-3,1 4,5-4,9 8,1

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery Idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1400	69,5-70,5 (67,5-72,5)	1440-1450*	-	-	100 300	16,2-16,6 mm PW 9,0-15,0 (7,0-17,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

Testoil-ISO 4113

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②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 OME 5,4 a
1. Edition

En

PES 4 A 90 D 410 RS 2518 Z RQ 300/1200 AB 989 DL
Komb.-Nr. 0 400 844 074

supersedes -
company: OM-Brescia
engine: 8340.05.291
62,5 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{2,15-2,25}{(2,10-2,30)}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1200	11,1+0,1	7,0 - 7,1	0,3(0,45)			
300	7,9-8,1	0,9 - 1,5	0,2(0,4)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
1000	14,2-15,8	1000	15,0	10,1 4,0	1245-1260 1370-1400	300	6,0	100 300 445-485=2,0 600 min. 7,5 5,9-6,1 max. 1,0		200 710 500	11,1-11,2 11,2-11,4 11,4-11,5

Torque-control travel on flyweight assembly dimension a = 0,4 mm Speed regulation: At 1245 - 1260 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
1200	69,5 - 70,5 (67,5 - 72,5)		500	900 500	65,5 - 68,5 (63,5 - 70,5) 61,5 - 64,5 (59,5 - 66,5)	100	125,0 - 135,0 (122,0 - 138,0) =16,6 - 17,2 mm RW

Checking values in brackets

3.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,2 K

1. Edition

En

Testoil ISO 4113

PES 4 M 55 C 320 RS 104
RSF 375/2300 M 6
Komb.-Nr. 0 400 074 995

supersedes
company Daimler-Benz
engine OM 615
49 kW
Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 1,70-1,80 mm (from BDC) Control rod travel
(1,65-1,85) 18,5-21,5

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,0 ^{+0,1}	3,7-3,8	0,25(0,3)			
375	6,1-6,3	0,65-0,75	0,1(0,15)			
1600			0,25(0,3)			
2300			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
11-15	min. 11 max. 10	250	50	12,4-12,6	2300		100	min. 20,1
(1)	6,1-6,3	300	(7)	9,5	2650		1600	12,7-12,9
(2)	**	375	(8)				1000	13,0-13,1
(3)	-	395	(9)	0-1,0	2900			
(4)	2,0	720-820	(10)					
(5)			(11)				(6) Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery (19)		Full-load speed regulation (8a)	Variations in fuel delivery (17)		Starting fuel delivery idle (18)		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2300	38,5-40,5 (37,5-41,5)	2650* RW = 9,5	1600	38,0-40,0 (37,0-41,0)	100	min. 53,0	6,0 (12a)
			1000	37,0-38,0 (36,0-39,0)	375	6,5-7,5 (6,0-8,0)	1,0 (15)
					2650	15,0-21,0 (14,0-22,0)	2,5 (16)
							(3,0)

Checking values in brackets

* ca: 3,0 mm control rod travel than in Column 2

1. ** Set the idle auxiliary spring at $n = 395 \text{ min}^{-1}$ so that the control-rod travel is exceeded by 1,4 - 1,5 mm.
2. Setting the idle control-lever position:
At 1000 min^{-1} , control rod travel 1.9 - 2.0 mm
3. Check the idle auxiliary spring shutoff
Control-lever position 47° . After change-over point up to 550 min^{-1} no change in control-rod travel. Control-lever position 30° . Speed range 350 min^{-1} - 450 min^{-1}
4. Check the pneumatic shutoff box
Control lever at idle stop.
At $n = 375 \text{ min}^{-1}$ and $p_u = 450 \text{ mbar (vacuum)}$ (338 mmHg) the control rod must return quickly to control-rod travel = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 2,4 m 1

3. Edition

En

PES 4 M 55 C 320 RS 107-1

RSF 375/2250 M 17

Komb.-Nr. 0 400 074 956 Sales model 0 400 074 957

1 - 3 - 4 - 2

0 - 90-180-270

supersedes 1.84

company Daimler-Benz

engine OM 616

53 kW (72 PS)

Sweden version

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 mm (from BDC) 18,5-21,5 Control rod travel
(2,15-2,35)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,4 ^{+0,1}	3,9-4,0	0,25(0,3)			
375	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
9-13	① min. 11,0	250	50	⑦ 12,5-12,7	2200		⑫ 100	min. 20,1
	② max. 10,5	300		⑧ 8,2- 8,6	2500		⑬	
	③ 6,0-6,2	375		⑨ -	-		⑭ 1800	12,8-13,0
	④ **	400		⑩ 0- 1,0	2950		1000	13,4-13,5
	⑤ -	-		⑪ -	-		⑥	Switching point
	2,0	720-820						

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑮		Full-load speed regulation ⑧a	Variations in fuel delivery ⑮		Starting fuel delivery Idle		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,2-8,6	1800	39,0-41,0 (38,0-42,0)	100	min. 53,0	6,0 ⑫a
			1000	39,0-40,0 (38,0-41,0)	375	6,0-7,0 (5,5-9,0)	1,0 ⑮
					2500	23,0-27,0 (22,0-28,0)	2,5 See ⑮
							3,0 Point 8 a ⑮

Checking values in brackets

4,2 less control rod travel than in Column 2

01.85

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Testoil-ISO 4113

1. ** Position the idle-speed auxiliary spring at $n = 400 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1.4 - 1.5 mm
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 3,0 o 2

3. Edition

En

PES 5 M 55 C 320 RS 108-1

RSF 350/2300 M 16

Komb.-Nr. 0 400 075 987

Sales model 0 400 075 988

supersedes 1.84

company Daimler-Benz

engine OM 617

65 kW (88 PS)

Sweden version

1 - 2 - 4 - 5 - 3

0 - 72-144-216-288 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers.

A. Fuel Injection Pump Settings

Port closing at prestroke 2,20-2,30 (2,15-2,35) mm (from BDC) 18,5-21,5 Control rod travel

Testoil-ISO 4113

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,4 ^{+0,1}	3,9-4,0	0,25(0,3)			
350	6,0-6,2	0,6-0,7	0,1 (0,15)			
1800			0,25(0,3)			
2200			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
9-13	① min. 10,0 ② max. 9,5 ③ 6,0-6,2 ④ ** ⑤ -	250 300 350 385 -	50	⑦ 12,5-12,7 ⑧ 8,6- 9,0 ⑨ - ⑩ 0-1,0 ⑪	2200 2500 - 2950		⑫ 100 ⑬ 1800 ⑭ 1000	min. 20,1 13,0-13,2 13,4-13,5
	2,0	780-820					⑥ Switching point	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ⑬		Full-load speed regulation ⑧a	Variation in fuel delivery ⑭		Starting fuel delivery Idle ⑮		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2200	39,5-41,5 (38,5-42,5)	2500* RW 8,6-9,0	1800 1000	39,0-41,0 (38,0-42,0) 39,0-40,0 (38,0-41,0)	100 350 2500	min. 53,0 6,0-7,0 (5,5-9,0) 23,0-27,0 (22,0-28,0)	6,0 ⑫a 1,0 1,5 ⑮ 2,5 See Point 8 a ⑯ 3,0

Checking values in brackets

Ca. 4,0 less control rod travel than in Column 2

01.85

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1. ** Position the idle-speed auxiliary spring at $n = 385 \text{ min}^{-1}$ so that the control-rod travel is forced further by 0.1 - 0.2 mm.
2. Adjusting the idle control-lever position:
At 1000 min^{-1} , control-rod travel 1,4 - 1,5 mm.
3. Testing the idle-speed auxiliary spring shutoff
Control-lever position 47° . No change in control-rod travel after switching point up to 550 min^{-1} .
Control-lever position 30° . Rotational-speed range 350 min^{-1} - 450 min^{-1} .
4. Testing the pneumatic shutoff box
Control lever against idle stop.
At $n = 375 \text{ min}^{-1}$ and 450 mbar (vacuum) (338 mmHg) the control rod must move briskly to RW (control-rod travel) = 0 mm.

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 3,0 v

3. Edition

En

PES 5 M 55 C 320 RS 109-1
RSV 350-1650 MOC 350-1

Komb. 0 400 075 007 Sales model 0 400 075 008
1-2-4-5-3-0-72-144-216-288 ± 50 (075)

supersedes 8.84
company Daimler-Benz
engine OM 617
57 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 2,20-2,30 \\ (2,15-2,35) \end{matrix}$ mm (from BDC) RW 20,0 mm

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1630	12,5+0,1	3,7-3,8	0,2 (0,3)			
350	6,2-6,5	0,6-0,8	0,1 (0,15)			
1150			0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever	Control rod travel mm	Control rod travel mm rev/min				Control lever deflection in degrees	rev/min	Control rod travel mm	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	10	11
loose	800	0,3-1,0				ca. 40	350	6,3	1150	13,2-13,3
									1350	12,7-12,9
									1630	12,5-12,6
ca. 75	11,6 = 1670-1680									
	4,0 = 1780-1800									
2a	0,3-1,7 = 2000		Set idle-speed auxiliary spring at 2 mm control-rod travel.							

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104 °F)		Note changed to) rev/min				Idle			
rev/min	cm ³ /1000 strokes	3	rev/min	cm ³ /1000 strokes	5	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2		4	5		6	7	8	9
1630	37,0-38,0 (36,0-39,0)	1670-1680*	1150	36,5-38,5 (35,5-39,5)		100	RW =20,3 min.53,0	350	6,3
						350	6,0-8,0 (5,5-9,0)		

* Adjustment angle = 0° horizontal control lever position.

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Testoil-ISO 4113

Test Specifications Fuel Injection Pumps and Governors

40

1A WPP 001/4 MB 3,0 v 3
2. Edition

En

PES 5 M 55 C 320 RS 109-1 RSV 400-2200 MOB 352

supersedes 1.84
company Daimler-Benz
OM 617
engine 65 kW

Komb.-Nr. 0 400 075 005

Sales model 0 400 075 006

1 - 2 - 4 - 5 - 3 = 0 - 72 - 144 - 216 - 288 ± 0,50 (0,75)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

2,20-2,30

Port closing at prestroke

(2,15-2,35)

mm (from BDC) RW = 20,0 mm

Testoil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
2180	12,4+0,1	3,85-3,95	0,2 (0,3)			
400	6,2-6,4	0,6-0,8	0,1(0,15)			
1000	13,1+0,1		0,25(0,3)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0				ca.39	400	6,3	1000	13,1+0,1
ca.70								1500	12,6-12,9	
								2180	12,4-12,5	
	2240-2250 = 11,4 2400-2420 = 4,0 2550 = 0,3-1,7									
2a	Set idle-speed auxiliary spring at 2 mm control-rod travel.									

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational speed limit		3a Fuel delivery characteristics		Starting fuel delivery Idle		5 Idle stop	
Test oil temp 40°C (104°F)		Note changed to)							
rev/min 1	cm ³ /1000 strokes 2	rev/min 3		rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
2180	38,5-39,5 (37,5-40,5)	2240-2250*		1000	36,5-37,5 (35,5-38,5)	100 400	min. 53 6,0-8,0 (6,5-9,0)	400	6,3

* Adjustment angle = 0° horizontal control lever position.

Checking values in brackets

* 1 mm less control rod travel than col 2

1.85

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Test Specifications Fuel Injection Pumps and Governors

40

WPP 001/4 MB 3,0 g

7. Edition

En

Testoil-ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 22
O 403 245 008

supersedes 5.82
company Daimler-Benz
engine OM 617A - USA
84,6 kW

See back before starting testing (setting the
idle stage.

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 2,10-2,20 mm (from BDC) 21 mm Control rod travel
(2,05-2,25)

ohne ALDA

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
30	① min. 11 ② max. 11 ③ 5,3-5,4 ④ ** ⑤ -	100 320 365	67 ± 2	⑦ 11,2 ⑧ 4,0 ⑨ 0-1,0 ⑩ - ⑪ -	2300-2320 2620-2720 2950 -		⑫ 100 ⑬ 1600 ⑭ 1000 2180	20,5-21,5 12,7-12,9 13,6-13,7 11,7-11,9
							⑥ Switching point 260-310 (240-390)	

C. Settings for Fuel Injection Pump with Governor Mounted

Full-load delivery ①9		Full-load speed regulation ⑧a	Variations in fuel delivery ①7		Starting fuel delivery Idle ①8		Difference
Test oil temp 40°C (104°F)							
rev/min	cm ³ /1000 strokes	rev/min	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	cm ³ /1000 strokes
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5)	100	min. 55,0	6,0
			1000	53,5-54,5 (52,5-55,5)	365	9,0-10,0 (7,5-11,5)	1,0
					375	(5,5-7,5)**	(1,5)
					2550	24,5-27,5 (23,5-28,5)	(1,5)
							2,5
							(3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

01.85

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Test with ALDA

Point	min ⁻¹	cm ³ /1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

Text replaces Section 4.1 of test instructions

Set control-lever position 30°.

Drive injection pump at $n = 800 \text{ min}^{-1}$.

Screw in spring retainer (torque-control retainer) so that control-rod travel of 1.0 - 1.3 mm is obtained.

Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

Bring sensing finger into engagement at $n = 350 \text{ min}^{-1}$ with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at $n = 1000 \text{ min}^{-1}$ and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

5. Shutoff check: Spring idle stop compressed.
at $n = 200 \text{ min}^{-1}$ max. control-rod travel = 5 mm.

6. Pin projection dimension = $16.65 \pm 0.1 \text{ mm}$

7. Checking the pneumatic shutoff:
Control lever in idle position. Drive injection pump at $n = 375 \text{ min}^{-1}$.
At $p_0 = 450 \text{ mbar}$ (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

Test Specifications Fuel Injection Pumps and Governors

Testoil-ISO 4113

PES 5 MW 55/320 RS 16
RW 375/2200 MW 28

See back before starting testing (setting the idle stage).

supersedes

company Daimler-Benz

engine OM 617A - USA

Komb.-Nr. 0 403 245 012

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

2,10-2,20
(2,05-2,25)

mm (from BDC)

21 mm

Control rod travel

ohne ALDA

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ /100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (compensating valve) mm
1	2	3	4	2	3	6
1000	13,6+0,1	5,35-5,45	0,25(0,3)			
365	5,3-5,4	0,9-1,0	0,10(0,15)			
1600			0,25(0,3)			
2180			0,25(0,3)			

Set uniform delivery according to the values in

Checking values in brackets

B. Governor Settings

Lower rated speed			Upper rated speed			Variations in control rod travel		
Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min	Degree of deflection of control lever	Control rod travel mm	Rotational speed rev/min		Rotational speed rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9
30	① min.11 ② max.11 ③ 5,3-5,4 ④ ** ⑤ -	100 320 365	67 ± 2	⑦ 11,2 ⑧ 4,0 ⑨ 0-1,0 ⑩ - ⑪ -	2300-2320 2620-2720 2950 -		⑫ 100 ⑬ 1600 ⑭ 1000 2180 ⑥ Switching point 260-310(240-330)	20,5-21,5 12,7-12,9 13,6-13,7 11,7-11,9

C. Settings for Fuel Injection Pump with Governor Mounted

Full load delivery Test oil temp 40°C (104°F)		Full-load speed regulation	Variations in fuel delivery		Starting fuel delivery Idle		Difference
rev/min	cm ³ /1000 strokes		rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	
1	2	3	4	5	6	7	8
2180	50,0-52,0 (49,0-53,0)	2300-2320* (2295-2325)	1600	52,0-53,5 (51,0-54,5)	100	min.55,0	6,0
			1000	53,5-54,5 (52,5-55,5)	365	9,0-10,0 (7,5-11,5)	1,0
					375	(5,5-7,5)**	(1,5)
					2550	24,5-27,5 (23,5-28,5)	2,5
							(3,0)

Checking values in brackets

* 1 mm less control rod travel than in Column 2

Test with ALDA

Point	min ⁻¹	cm ³ /1000 lifts	Control-rod travel	Pressure (absolute)
18	1000	53.5 - 54.5 (52.5 - 55.5)	13.6 - 13.7	1733 mbar (1300 mmHg)
18a	1000***	43.0 - 45.0 (42.0 - 46.0)	-	1067 mbar (800 mmHg)
19	2180	50.0 - 52.0 (49.0 - 53.0)	11.7 - 11.9	1733 mbar (1300 mmHG)
12a	100	min. 55.0	20.5 - 21.5	1733 mbar (1300 mmHG)
15	365	9.0 - 10.0 (7.5 - 11.5)	5.3 - 5.4	987 mbar (740 mmHG)

1. Setting the idle stage: without ALDA

Text replaces Section 4.1 of test instructions

Set control-lever position 30°.

Drive injection pump at $n = 800 \text{ min}^{-1}$.

Screw in spring retainer (torque-control retainer) so that control-rod travel of 1,4 - 1,7 mm is obtained.

Further test steps as per test instructions VDT-W-420/300.

2. ** Engagement of idle-speed aux. spring at shallowing-out of characteristic; no change allowable in idle delivery.

3. Setting the sensing finger:

Bring sensing finger into engagement at $n = 350 \text{ min}^{-1}$ with control lever in full-load position. Control-rod travel must be 0.2 - 0.5 mm (0.1-0.6) mm above full-load control-rod travel at $n = 1000 \text{ min}^{-1}$ and 1733 mbar (1300 mmHG)/setting without ALDA.

4. *** Correction of injection quantity at correction screw on ALDA aneroid box. Max. correction $\pm 0.75 \text{ mm}$ control-rod travel.

5. Shutoff check: Spring idle stop compressed.
at $n = 200 \text{ min}^{-1}$ max. control-rod travel = 5 mm.

6. Pin projection dimension = $16.65 \pm 0.1 \text{ mm}$

7. Checking the pneumatic shutoff:
Control lever in idle position. Drive injection pump at $n = 375 \text{ min}^{-1}$.
At $p_u = 450 \text{ mbar}$ (338 mmHG) (vacuum) control rod must move briskly to control-rod travel 0 mm.

8. Adjustment range between idle and full load = 35 - 39°

9. ** Idle checking point.

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 d1

5. Edition

En

PE 6 P 120 A 320 RS 3050

ROV 250 - 1100 PA 611

supersedes 7.83

company: Volvo

engine: TD 120 F

Komb.-Nr. 0 401 846 747

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Test oil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke $2,4 - 2,5$ mm (from BDC) = RW 9,0 - 12,0 mm
(2,35 - 2,55)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,8+0,1	23,0 - 23,3	0,5(0,9)			2,5 ± 0,1
250	3,6-3,8	1,8 - 2,3	0,5(0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1180	15,2-17,8	-	-	-	ca. 7	100	min. 5,1	200	0,7-0,9
ca. 64	11,8 4,0 1350	1160-1170 1225-1255 0- 1,0					250 300 - 360=2,0	3,6-3,8	500 660- 1040 100	4,2-4,8 6,4-6,6 7,3

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	1,2 bar 230,0-233,0 (227,0-236,0)	1160-1170*	LDA 700	0 bar 138,0-142,0 (135,0-145,0)	-	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

1.85

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J13

D. Adjustment Test for Manifold Pressure Compensator

- 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 12,0 d 1

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P .. RS 3050 + RQV .. PA 611	1,20	0 0,82 0,07	12,8 - 12,9 9,1 - 9,2 12,6 - 12,7 9,2 - 9,4

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 ROL 16,3 a

1. Edition

En

PE 8 P 120 A 120 RS 3059 RQ 750 PA 416 R
Komb.-Nr. 0 401 838 700
1 - 4 - 3 - 5 - 8 - 7 - 6 - 2 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

supersedes -
company: Rolls Royce
engine: CV 8 TCA
250 kW (340 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,45-3,65) mm (from BDC) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	14,4+0,1	24,7-25,1	0,5(0,9)			
300	6,1-6,3	3,8-4,4	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	13,4 4,0 900	750-755 775-785 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 750 - 755 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 Control rod travel mm 7	
700	247,0-251,0 (244,0-254,0)	-	-	-	-	100	19,5 - 21,0

Checking values in brackets

2.85

Testoil-ISO 4113

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 SCA 11,0 t. 1

1. Edition

En

PE 6 P 110 A 720 RS 3065 RSV 350 - 900 P 7/481
Komb.-Nr. 9 400 087 286

supersedes
company Saab-Scania Brasilien
engine D 11
137 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 3,3 -3,4
(3,25-3,45) mm (from BD₅) RW = 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
900	12,2-0,1	13,5-13,7	0,4 (0,8)			2,5 ± 0,1
950	6,0-6,2	0,8-1,2	0,2 (0,4)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Control lever deflection in degrees rev/min 7			3 Torque control rev/min 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	Control rod travel mm 11
loose	800	0,3-1,0 x = 6,0	-	-	-	ca. 20	350	5,6	-	-
ca. 56	11,2	940-950					100	min. 20,0		
2a	4,0	970-1000					350	6,0-6,2		
	1100	0,3-1,7					475 - 535	= 2,0		

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational speed limit Note changed to) rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop rev/min 8	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		Control rod travel mm 9	
900	135,0-137,0 (132,0-140,0)	940-950*	600	132,5-136,5 (129,5-139,5)	100	190,0-240,0 =20,0-21,0 mm RW	950	8,0-12,0	

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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Testoil-ISO 4113

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 I

5. Edition

En

PE 6 P 120 A 720 RS 3069

RQV 300-1000 PA 501

supersedes 10.83

Komb.-Nr. 0 401 846 728

company: Fiat

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

engine: 8210.22.269
220 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,45-3,65)

mm (from BDC) RW=9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0	1 20,1-20,3	0,5(0,9)			
300	6,0-6,2	2 1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min. 7,6	325	1,2-1,4
ca. 65	11,4 4,0 1250	1040-1050 1115-1145 0-1,0				350-455	300	6,0-6,2	450 800 1000	2,6-3,1 5,7-6,0 7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1000	0,7 bar 201,0-203,0 (198,0-206,0)	1040-1050*	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 i

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel- diminution difference
	Gauge pressure - bar	Gauge pressure - bar	mm (1)
PE 6 P..RS 3069 +RQV..PA 501	0,70	0	12,4-12,5
		0,36	10,0-10,1
		0,31	11,6-11,7
			10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PE 6 P 120 A 720 RS 3069

RQ 300/1000 PA 502

superseded 10.83

company Fiat

engine 8210.22.373

Komb.-Nr. 0 401 846 729

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\overset{3,5-3,6}{(3,45-3,65)}$ mm (from BDRW=9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	20,1-20,3	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
600	19,2-20,8	600	20,0	11,4	1045-1060	300	6,1	100	min.7,6	1000	12,4-12,5
VH=	max. 46°			4,0	1130-1160			300	6,0-6,2	600	12,4-12,6
				1250	0-1,0			365-405	2,0		

Torque-control travel on flyweight assembly dimension a = 0 mm Speed regulation: AI 1045-1060 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /-1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /-1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
LDA 1000	0,7 bar 201,0-203,0 (198,0-206,0)	-	-	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)

Checking values in brackets

D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 h

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure, increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 3069 +RQ..PA 502	0,70	0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 FIA 13,8 i 1

1. Edition

En

PE 6 P 120 A 720 RS 3069

RQV 300-1200 PA 727

Komb.-Nr. 9 400 087 309

supersedes-

company: Fiat Diesel

engine: 8210.11

220 kW

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke ^{3,5-3,6} (3.45-3.65) mm (from BDC) ^{RH=9.0-12.0 mm}						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1000	12,4+0,1	19,9-20,1	0,5(0,9)			
300	6,0-6,2	1,5-2,1	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1045	15,2-17,8	-	-	-	ca. 10	100	min. 7,6	325	1,2-1,4
ca. 65	11,4	1040-1050					300	6,0-6,2	450	2,6-3,1
	4,0	1115-1145							800	5,7-6,0
	1250	0-1,0				350-455			1000	7,9
						③a				

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b		Fuel delivery characteristics ⑤a		Starting fuel delivery idle switching point ⑥		Torque-control ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	cm ³ /1000 strokes 4	rev/min 5	cm ³ /1000 strokes 6	rev/min 7	cm ³ /1000 strokes 8	rev/min 9	Control rod travel mm 10
LDA 1000	0,7 bar 199,0-201,0 (196,0-204,0)	1040-1050*	LDA 1000	0 bar 158,0-160,0 (155,0-163,0)	100	175,0-195,0 (171,0-199,0)	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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D. Adjustment Test for Manifold Pressure Compensator

FIA 13,8 1 1

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel	diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)	
PE 6 P..RS 3069 +RQV..PA 727	0,70	0 0,36 0,31	12,4-12,5 10,0-10,1 11,6-11,7 10,6-11,0	

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 RVI 12,0 a

6. Edition

En

PES 6 P 120 A 320 RS 3070 RQV 250-1100 PA 495

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 067

superseded 5.83

company: RVI

engine: MIDR 063540

223 kW (304 PS)

Komb.-Nr. 0 402 046 719

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,45-3,65)

3,50-3,60

mm (from BDC) RW 9,0 - 12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,9-13,0	19,3-19,5	0,5(0,8)			
250	4,3-4,5	1,4-2,0	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

Mark for start of pump delivery on tester body 12° after start of pump delivery, cylinder
No. 1 = 9,0-12,0 mm control-rod travel.

B. Governor Settings

Upper rated speed				Intermediate rated speed				Lower rated speed				Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	①a	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	④	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	③	rev/min 10	mm 11
max.	1160	15,2-17,8		-	-	-		ca. 9	200 300	min. 6,0 4,3-4,5		250 800 100	0,9-1,0 4,6-4,8 7,7
ca. 66	11,9 4,0 1350	1160-1170 1235-1265 0-1,0						290-400			③a		

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5)	
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1100	0,7 bar 193,0-195,0 (190,0-198,0)	1160-1170*	LDA 500	3 bar 124,0-126,0 (121,0-129,0)	100 100-	150,0-170,0 70 (80-190)	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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D. Adjustment Test for Manifold Pressure Compensator

RVI 12,0 a

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3070 +RQV..PA 495	0,70	0 0,29 0,21	12,9-13,0 10,6-10,7 12,5-12,6 11,0-11,4

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f 5

1. Edition

En

FE 6 P 120 A 320 RS 3071 RQV 300-1050 PA 371-1
Komb.-Nr. 0 401 846 780

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes -

company: Volvo

engine: TD 1206 BM

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$
($2,55 - 2,75$) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	10,5+0,1	17,5 - 17,7	0,5 (0,9)			2,5 ± 0,1
300	5,3-5,5	1,7 - 2,1	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 14	100	min. 6,8	250	1,1-1,3
ca. 43	9,5	1105-1115					250	5,3-5,5	520	3,1-3,5
	4,0	1185-1215					380	- 440=2,0	780	5,0-5,3
	1325	0-1,0				3a			1050	7,5

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control travel ⑤	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 700	0,9 bar 175,0-177,0 (172,0-180,0)	1105 - 1115	LDA 1000	0,9 bar 180,0-186,0 (177,0-189,0)	-	-	-	-
			LDA 700	0 bar 148,0-152,0 (146,0-154,0)	300	17,0 - 21,0		

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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Test-CI-ISO 4113

K1

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 f 5

- 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 6 P .. RS 3071 + RQV .. PA 371-1	0,90	0 0,57 0,41	10,5 - 10,6 9,1 - 9,2 10,1 - 10,2 9,4 - 9,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f 4

3. Edition

En

PE 6 P 120 A 320 RS 3071 Z RQV 250-1025 PA 371

Komb.-Nr. 0 401 846 766

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 7.83

company: Volvo

engine: TD 120 G/USA
243 kW (330 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,6 - 2,7$ mm (from BDC) (2,55-2,75)						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,4+0,1	19,6 - 19,8	0,5 (0,9)			2,5 ± 0,1
250	5,8-6,0	2,2 - 2,6	0,5 (0,7)			(2,2 - 2,9)

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1100	15,2-17,8	-	-	-	ca. 12	100	min. 7,3	200	0,7-0,9
ca. 42	10,4	1065-1075					250	5,8-6,0	475	2,8-3,1
	4,0	1145-1175					350-410 = 2,0		750	4,8-5,1
	1300	0-1,0				3a			1025	7,2

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,9 bar 196,0-198,0 (192,0-202,0)	1065 - 1075	LDA 700	0 bar 164,0-168,0 (161,0-171,0)	100	240,0-280,0 = RW 20,0 21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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Test ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

VOL 12,0 f 4 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 3071 Z + RQV .. PA 371	0,90		11,4 - 11,5
		0	9,9 - 10,0
		0,45	11,0 - 11,1
		0,28	10,1 - 10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 VOL 12,0 f2

2. Edition

En

PE 6 P 120 A 320 RS 3071 Z RQV 250-1100 PA 371/2R
Komb.-Nr. 0 401 846 765

supersedes 1.83

company: Volvo

engine: TD 120 F

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 0 67

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

Port closing at prestroke

2,6-2,7

(2,55-2,75)

mm (from BDC)

RW 9,0-12,0 mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,7+0,1	24,1-24,3	0,5(0,9)			
250	5,3-5,5	2,2-2,6	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1150	15,2-17,8	-	-	-	ca. 12	100	min. 6,8	200	0,7-0,9
ca. 46	11,7 4,0 1350	1140-1150 1215-1245 0 - 1,0					250 300-360=2,0	5,3-5,5	500 800 1100	2,9-3,3 5,1-5,4 7,9

Torque control travel a = - mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ②b	Fuel delivery characteristics high idle speed ⑤a		Starting fuel delivery idle switching point ⑥	Torque-control travel ⑤		
rev/min 1	cm³/1000 strokes 2	rev/min 3	rev/min 4	cm³/1000 strokes 5	rev/min 6	cm³/1000 strokes 7	rev/min 8	Control rod travel mm 9
LUA 700	0,9 bar 241,0-243,0 (238,0-246,0)	1140-1150*	LUA 700	0 bar 153,0-157,0 (150,0-160,0)	100	240,0-280,0 = RW 20,0 - 21,0 mm	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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K5

D. Adjustment Test for Manifold Pressure Compensator

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

VOL 12,0 f 2

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = 0 bar	mm (1)
PE6P..RS 3071Z + RQV..PA 371/2R	0,67	0,90 0 0,26	11,9-12,0 12,7-12,8 9,3- 9,4 10,1-10,3

Notes

(1) when n = rev/min and gauge pressure = bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/SCA 8,0 m 3

2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 750 PA 528

supersedes 6.83

company Scania

engine DS 840

Komb.-Nr. 0 401 846 775

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,3-3,4$ mm (from BDC)
(3,25-3,45)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	11,9±0,1	11,7-11,9	0,5 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
Control rod travel mm 2		Setting point		Test specifications		Setting point		Test specifications		Control rod travel	
rev/min 1	mm	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At $750-755 \text{ min}^{-1}$ 1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop		Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	Control rod travel mm 3a	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	Control rod travel mm 7
700	117,0-119,0 (115,0-121,0)	-	-	-	-	100	190,0-240,0 20,0-21,0 mm RW

Checking values in brackets

4.85

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Testoil-ISO 4113

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 m

2. Edition

En

PE 6 P 110 A 720 RS 3076

RQ 900 PA 528

supersedes 6.33

company Scania

engine DS8 40

Komb.-Nr. 0 401 846 776

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

Testoil-ISO 4113

A. Fuel Injection Pump Settings

 Port closing at prestroke ^{3,3 - 3,4}
 (3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	11,9+0,1	12,0-12,2	0,5(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
①		Setting point		Test specifications		④		⑤		③	
rev/min 1	Control rod travel mm 2	rev/min 3	Control rod travel mm 4	Control rod travel mm 5	rev/min 6	rev/min 7	Control rod travel mm 8	rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
-	-	-	-	10,9 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a = mmSpeed regulation: At 900-905 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
②		③a	③b		⑥	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
850	120,0-122,0 (118,0-124,0)	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

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K9

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 18° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 m 2
2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 750 PA 528-1
Komb.-Nr. 0 401 846 777

supersedes 6.03
company Scania
engine DS 16 40

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\begin{matrix} 3,3-3,4 \\ (3,25-3,45) \end{matrix}$ mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,6+0,1	13,2-13,4	0,6 (0,8)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7 Control rod travel mm 8		Test specifications rev/min 9 Control rod travel mm 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	11,6 4,0 850	750-755 784-797 0-1,0	-	-	-	-	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

750-755 min⁻¹1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
700	132,0-134,0 (130,0-136,0)	-	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.05

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Testoil-ISO 4113

K11

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 17° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 SCA 8,0 m 1

2. Edition

En

PE 6 P 110 A 720 RS 3076 RQ 900 PA 528-2

Komb.-Nr. 0 401 846 778

supersede 6.83

company Scania

engine DS 18 40

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $3,3 - 3,4$
(3,25-3,45) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
850	12,6+0,1	13,4-13,6	0,6(0,8)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5 rev/min 6		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 9 rev/min 10		Torque control rev/min 11 Control rod travel mm 12	
-	-	-	-	11,6 4,0 1000	900-905 941-955 0-1,0	-	-	-	-	-	-

Torque-control travel on flyweight assembly dimension a = mm Speed regulation: At 900-905 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1 cm ³ /1000 strokes 2		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4 cm ³ /1000 strokes 5		Starting fuel delivery Idle speed rev/min 6 cm ³ /1000 strokes/mm 7	
850	134,0-136,0 (132,0-138,0)	-	-	-	-	100	190,0-240,0 = 20,0-21,0 mm RW

Checking values in brackets

4.85

Testoil-ISO 4113

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K13

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a ROBO diaphragm
- For combination with letter index see VDT-I-400/116
- For sealing, see VDT-I-400/117
- Test specifications approved by Scania on 22.8.1983
- Start of fuel delivery-engine: 17° before TDC
- Firing sequence, engine : 1-5-3-6-2-4

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 STE 12,0 b 2

1. Edition

En

PE 8 P 110 A 121 LS 3113

RQV 250-1100 PA 702

Komb.-Nr. 0 401 858 703

supersedes

company Steyr

engine: WD 815.67

242 kW

1 - 5 - 4 - 8 - 6 - 3 - 7 - 2 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $2,8 - 2,9$
(2,75-2,95) mm (from BDC)

Rotational speed rev/min	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Difference cm ³ / 100 strokes	Control rod travel mm	Fuel delivery cm ³ /100 strokes	Spring pre-tensioning (torque-control valve) mm
1	2	3	4	2	3	6
1100	11,8±0,1	15,0-15,2	0,4(0,75)			
250	6,1-6,3	1,5-2,1	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever	rev/min Control rod travel mm	Control rod travel mm rev/min	Degree of deflection of control lever	rev/min	Control rod travel mm	Degree of deflection of control lever	rev/min	Control rod travel mm	rev/min	mm
1	2	3	4	5	6	7	8	9	10	11
max.	1140	15,2-17,8	-	-	-	ca. 11	100	min. 7,6	200	0,7-0,9
ca. 62	10,8	1140-1150					250	6,1-6,3	500	3,6-4,1
	4,0	1210-1240					425-485 = 2,0		800	5,4-5,7
	1350	0-1,0							1100	8,0

Torque control travel a = 0,9 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F)		Rotational speed limitation intermediate speed		Fuel delivery characteristics high idle speed		Starting fuel delivery idle switching point		Torque-control	
rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	cm ³ /1000 strokes	rev/min	Control rod travel mm
1	2	3	4	5	6	7	8	9	
LDA 1100	0,9 bar 150,0-152,0 (147,0-155,0)	1140-1150*	LDA 600	0,9 bar 166,0-170,0 (163,0-173,0)	100	200,0-240,0 (196,0-244,0)	1100	11,8±0,1	
			LDA 500	0 bar 107,0-109,0 (104,0-112,0)			600	12,7±0,1	

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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Test oil ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

STE 12,0 b 2 - 2 -

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel - diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 8 P..LS 3113 + RQV..PA 702	0,90	0 0,65 0,48	12,7-12,8 9,7-9,8 12,2-12,4 10,6-10,8

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

Test Specifications Fuel Injection Pumps ② and Governors

PES 6 P 110 A 820 LS 3131-10
Komb.-Nr. 0 402 046 751

RQ 300/1100 PA 723

supersedes-

company Daimler-Benz
engine OM 427 H
177 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,3-4,4$
($4,25-4,45$) mm (from BDC) RW = $9,0-12,0$ mm

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1100	12,1+0,1	14,0-14,2	0,4(0,8)			
300	7,4-7,6	1,4-2,0	0,4(0,7)			
600	-	C, Sp. 4 u. 5	0,6(0,8)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		Full-load speed regulation Setting point rev/min 3		Test specifications Control rod travel mm 5		Idle speed regulation Setting point rev/min 7		Test specifications Control rod travel mm 10		Torque control rev/min 11	
	Control rod travel mm 2		Control rod travel mm 4		rev/min 6		Control rod travel mm 8		rev/min 9		Control rod travel mm 12
550	19,2-20,8	550	20,0	11,2	1145-1160	300	7,5	100	min. 9,0	-	-
VH =	max. 46°			4,0	1190-1220			300	7,4-7,6		
				1300	0-1,5			340-380	= 2,0		

Torque-control travel

on flyweight assembly dimension a = mm

Speed regulation: At $1145-1160 \text{ min}^{-1}$

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		Control rod stop rev/min 3		Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle speed rev/min 6	
	cm ³ /-1000 strokes 2				cm ³ /-1000 strokes 5		cm ³ /1000 strokes/mm 7
1100	140,0-142,0 (137,0-145,0)	-		600	117,0-121,0 (114,0-124,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 k 2

2. Edition

En

PE 8 P 120 A 320 LS 3807-10 RQV 300-1150 PA 545-2
Komb.-Nr. 0 401 848 762

supersedes 12.84

company: Daimler-Benz

engine: OM 422 A
243 kW

1-8-7-2-6-3-5-4 je $45^\circ \pm 0,5^\circ (\pm 0,75^\circ)$
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC) Zyl. 8

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,5+0,1	15,3-15,5	0,5(0,9)			
300	5,2-5,4	1,2-1,8	0,8(1,2)			
750	-	C, Sp.4 u. 5	0,7(1,2)			
500	-					

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1190	15,2-17,8	-	-	-	ca. 17	100	min.6,7	300	1,6-1,8
ca. 54	9,5 4,0 1350	1190-1200 1235-1265 0-1,0					300	5,0-5,2	800	6,0-6,2
							335-405=2,0		200	8,1-8,3
									260	9,9

Torque control travel a = 0,6 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed limitation intermediate speed 4a	Fuel delivery characteristics high idle speed 5b		Starting fuel delivery idle switching point 6		Torque-control travel 6	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 153,0-155,0 (150,0-158,0)	1190-1200*	LDA 750	0,7 bar 171,0-174,0 (168,0-177,0)	100	140,0-160,0 (136,0-164,0)	1150	10,5+0,1
			LDA 500	0 bar 139,0-141,0 (136,0-144,0)			750	11,1+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

4.85

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Test ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 k 2

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel diminution difference mm (1)
PE 8 P..LS 380/-10 +RQV..PA 545-2	0	0,45 0,50	10,3-10,4 10,4-10,5 10,8-11,0

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 011/4 MB18,3a
2. Edition
En

Testoil-ISO 4113

PE 10 P 110 A 320 LS 3808 RQ 300/1150 PA 187-3

Kombi-Mtr. 0 401 042 700

10 - 9 - 4 - 1 - 8 - 7 - 6 - 3 - 5 - 2

0 -45 -72 -117-144-189-216-261-288-333^{0±} 0,50^{0(±0,75°)}

superseded by 8.80
company: Daimler Benz
engine: OM 423
259 kW(352 PS)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-4,15) mm (from BDC)
4,00-4,10

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1 150	12,2±0,1	12,3 - 12,5	0,4(0,75)			
300	8,0-8,2	1,6 - 2,2	0,4(0,9)			
600	-	C.Sp. 4-5	0,6(0,9)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check rev/min 1		①		Full-load speed regulation Setting point rev/min 3		④		Idle speed regulation Setting point rev/min 7		⑤		Torque control rev/min 11		③	
Control rod travel mm 2		Control rod travel mm 4		Control rod travel mm 5	rev/min 6	Control rod travel mm 8		Control rod travel mm 9		Control rod travel mm 10		Control rod travel mm 12			
650	13.0-14,0	650	13,5	11,2	1195-1210	300	8,1	100	min. 10,2	-	-	-	-	-	-
				4,0	1235-1265			300	8,0-8,2						
				135°	0 - 1,0			420-460	= 2,0						
								550	max. 1,0						

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: At

1 mm less control
rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F) rev/min 1		②		Control rod stop rev/min 3		③a		Fuel delivery characteristics rev/min 4		③b		Starting fuel delivery Idle speed rev/min 6		⑥	
cm ³ /1000 strokes 2		cm ³ /1000 strokes 3		cm ³ /1000 strokes 4		cm ³ /1000 strokes 5		cm ³ /1000 strokes 6		cm ³ /1000 strokes 7		cm ³ /1000 strokes 8		Control rod travel mm 9	
1150	123,0 - 125,0 (120,5 - 127,5)	600		600		600	116,0 - 120,0 (113,0 - 123,0)	100		130,0 - 150,0 (126,0-154,0)					

Checking values in brackets

4.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 e 1

2. Edition

PE 6 P 120 A 320 LS 3810 RSV 350 - 1150 PO/810

En

supersedes 3.84

company Daimler-Benz

engine OM 421 A

184 KW

Komb.-Nr. 0 401 876 733

0-75-120-195-240-315° + 0,5° (+ 0,75°)

Values only apply to test nozzle-and-holder

assembly 1 688 901 019 and fuel-injection test

tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

4,0 - 4,1

Port closing at prestroke (3,95-4,15)

mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	10,6+0,1	16,3-16,5	0,5 (0,9)			
350	4,7-4,9	1,6- 2,2	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min			Intermediate rated speed			4 Lower rated speed			3 Torque control	
Degree of deflection of control lever 1	Control rod travel mm 2	Control rod travel mm rev/min 3	4	5	6	Control lever deflection in degrees 7	rev/min 8	Control rod travel mm 9	rev/min 10	Control rod travel mm 11
lose	800	0,3-1,0	-	-	-	ca. 36	350	4,8	-	-
	x	= 4,75					100	min. 19,5		
ca. 56	9,6	1175-1185					350	4,7 - 4,9		
2a	4,0	1250-1270					380-440	= 2,0		
								**		

Set idle-speed auxiliary spring at 2 mm control-rod travel.

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop		6 Rotational-speed limit		3a Fuel delivery characteristics		Starting fuel delivery 5		4a Idle stop	
Test oil temp 40°C (104°F)		Note: changed to .) rev/min				Idle			
rev/min 1	cm ³ /1000 strokes 2	3	4	5	6	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
1130	163,0 - 165,0 (160,0 - 168,0)	1175-1185*	-	-	100	140,0-160,0 (136,0-164,0)	-	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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Test Specifications Fuel Injection Pumps and Governors

WPP 001/4 MB 14,6 f
7. Edition

En

Testoil-ISO 4113

PE8P120A320LS3811 RQ 300/1150 PA 556
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

superseded by 6.84
company Daimler-Benz
engine OM 422 A
243 kW (330 PS)

Komb.-Nr. 0 401 848 734

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke (3,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	10,4 ± 0,1	16,2 - 16,4	0,4 (0,8)			
300	5,0-5,2	1,4 - 2,2	0,8 (1,2)			
600	-	C, Sp. 4 u. 5	0,8 (1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications rev/min 5	Control rod travel mm 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
600	19,1-20,8	600	20,0	9,4	1195-1210	300	4,2	100	min. 6,0	-	-
VH =	max. 46°			4,0	1225-1255			300	4,1-4,2		
								340-380	= 2,0 mm		

Torque-control travel on flyweight assembly dimension a = - mm Speed regulation At 1195-1210 min⁻¹ 1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /100 strokes 7
1150	162,0 - 164,0 (159,0 - 167,0)	-	600	152,0 - 158,0 (149,0 - 161,0)	100	125,0-145,0 (121,0-149,0)

Checking values in brackets

②

Test Specifications Fuel Injection Pumps ② and Governors

40

WPP 001/4 MB 11,0 r

1. Edition

En

PE 6 P 110 A 320 LS 3814-10
Komb.-Nr. 0 401 846 805

RQ 300/1150 PA 187-6

supersedes-

company: Daimler-Benz
OM 421
engine: 159 kW

1 - 6 - 3 - 5 - 2 - 4
0 - 75 - 120 - 195 - 240 - 315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke

(3,95-4,15)

mm (from BD@yl. 6; RW=9,0-12,0 mm)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	12,4+0,1	13,2-13,4	0,4(0,8)			
300	8,3-8,5	1,2-1,8	0,4(0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Checking of slider PRG check		Full-load speed regulation				Idle speed regulation				Torque control	
rev/min 1	Control rod travel mm 2	Setting point rev/min 3	Control rod travel mm 4	Test specifications Control rod travel mm 5	rev/min 6	Setting point rev/min 7	Control rod travel mm 8	Test specifications rev/min 9	Control rod travel mm 10	rev/min 11	Control rod travel mm 12
650	13,2-14,0	650	13,6	11,5 4,0 1350	1195-1210 1240-1270 0-1,0	300	8,4	100 300 430-470=2,0	min.10,0 8,3-8,5	-	-

Torque-control travel
on flyweight assembly dimension a =

mm

Speed regulation: AI

1 mm less control rod travel

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery on governor control lever Test oil temp. 40°C (104°F)		Control rod stop	Fuel delivery characteristics		Starting fuel delivery Idle speed	
rev/min 1	cm ³ /-1000 strokes 2	rev/min 3	rev/min 4	cm ³ /-1000 strokes 5	rev/min 6	cm ³ /1000 strokes/mm 7
1150	132,0-134,0 (129,5-136,5)	600	600	110,0-114,0 (107,0-117,0)	100	130,0-150,0 (126,0-154,0)

Checking values in brackets

3.85

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K23

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 k 1

1. Edition

En

PE 6 P 110 A 320 LS 3814-10 RSV 350-1150 PCA 810
Komb.-Nr. 0 401 876 723
1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° $\pm 0,5^\circ$ ($\pm 0,75^\circ$)

supersedes -
company Daimler-Benz
engine OM 421
159 kW

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC) Zyl. 6; RW = 9,0 - 12,0 mm
(3,95-4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	12,1 \pm 0,1	13,5 - 13,7	0,4 (0,8)			
350	7,7-7,9	1,4 - 2,0	0,4 (0,7)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			4 Lower rated speed Control-lever deflection in degrees 7 rev/min 8			3 Torque control Control rod travel mm 10 11	
loose	Control rod travel mm 2	Control rod travel mm rev/min 3								
	800	0,3-0,7	-			ca. 28			-	
	x = 3,25					350			7,8	
ca. 53	11,1	1165-1175				350			7,7-7,9	
2a	4,0	1240-1260				430 - 490			= 2,0	
	1400	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp 40°C (104°F) rev/min 1		6 Rotational-speed limit Note changed to 1 rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		5 Idle stop Control rod travel mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7			
1130		1165-1175*		-		100		-	
135,0-137,0 (132,5-139,5)						140,0-160,0 - (136,0-164,0)			

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 q

3. Edition

En

PE 6 P 120 A 320 LS 3815

RSV 650-1150 P1/820 R

superseded 3.83

company Daimler-Benz

engine OM 421 A

184 kW

Komb.-Nr. 0 401 876 722

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

4,0-4,1

Port closing at prestroke

(3,95-4,15)

mm (from BDG) cyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0+0,1	16,3-16,5	0,5(0,9)			
650	3,5-3,7	1,6-2,2	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees rev/min Control rod travel mm			3 Torque control rev/min Control rod travel mm	
2	Control rod travel mm	Control rod travel mm rev/min	4	5	6	7	8	9	10	11
lose	800	0,3-1,0	-	-	-	ca. 36	650	3,6	-	-
	X = 3,0						650	3,5-3,7		
	10,0	1160-1170					655-715	= 2,0		
	4,0	1185-1200						**		
2a	1300	0,3-1,7								

** Set idle-speed auxiliary spring at 2 mm control-rod travel.
The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full load stop Test oil temp 40°C (104°F) rev/min cm ³ /1000 strokes		6 Rotational-speed limit Note changed to) rev/min		3a Fuel delivery characteristics rev/min cm ³ /1000 strokes		Starting fuel delivery 5 Idle rev/min cm ³ /1000 strokes		4a Idle stop rev/min Control rod travel mm	
1	2	3	4	5	6	7	8	9	
1130	163,0-165,0 (160,0-168,0)	1160-1170*	-	-	100	140,0-160,0 (136,0-164,0)	0,0 - (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

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3.85

Testoil-ISO 4113

Test Specifications Fuel Injection Pumps (1A) and Governors

40

WPP 001/4 MB 11,0 q 2

1. Edition

En

PE 6 P 120 A 320 LS 3815 RSV 750-1150 P 17820-1

1- 6- 3 - 5 - 2 - 4
0-75-120-195-240-315° ± 0,5° (± 0,75°)

supersedes

company Daimler-Benz

engine OM 421 A

184 kW

Komb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1
(3,95-4,15) mm (from BDC) Zyl. 6

Testcil-ISO 4113

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0+0,1	16,3-16,5	0,5 (0,9)			
750	3,6-3,8	1,8-2,4	0,8 (1,2)			
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

① Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed 4 5 6			④ Lower rated speed Control-lever deflection in degrees 7 rev/min 8			③ Torque control Control rod travel mm 10 11	
Control rod travel mm 2	Control rod travel mm rev/min 3					Control rod travel mm 9				
lose	800	0,3-1,0	-	-	-	ca. 36	750	3,7	-	-
	x = 4,0						750	3,6-3,8		
							655-815	= 2,0		
ca. 60	10,0	1160-1170								
②a	4,0	1185-1200								
	1300	0,3-1,7								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

②b Full-load stop Test oil temp 40°C (104°F) rev/min 1		⑥ Rotational-speed limit Note changed to) rev/min 3		③a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		④a Idle stop Control rod travel mm 8 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	mm 9
1130	163,0-165,0 (160,0-168,0)	1160-1170*	-	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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Test Specifications Fuel Injection Pumps 1A and Governors

40

WPP 001/4 MB 11,0 q 3

1. Edition

En

PE 6 P 120 A 320 LS 3815-10 RSV 750-1150 P 1 A 820-1

1- 6- 3 - 5 - 2 - 4

0-75-120-195-240-315° ± 0.5° (± 0.75°)

supersedes

company Daimler-Benz

engine OM 421 A

184 kW

Komb.-Nr. 0 401 876 722

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1
(3,95-4,15) mm (from BDC) Zyl. 6

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1130	11,0±0,1	16,3-16,5	0,5 (0,9)			
750	3,6-3,8	1,8-2,4	0,8 (1,2)			
Values only apply to test nozzle-and-holder assembly 1 688 901 019 and fuel-injection test tubing 1 680 750 067						

Adjust the fuel delivery from each outlet according to the values in

Testoil-ISO 4113

B. Governor Settings

1 Upper rated speed rev/min Degree of deflection of control lever 1			Intermediate rated speed			4 Lower rated speed Control-lever deflection in degrees 7			3 Torque control Control rod travel mm 11	
Control rod travel mm 2	Control rod travel mm rev/min 3		4	5	6	rev/min 8	Control rod travel mm 9		rev/min 10	
loose	800	0,3-0,7	-	-	-	ca. 36	750	3,7	-	-
	x = 4,0						750	3,6-3,8		
							655-815	5 = 2,0		
ca. 60	10,0	1160-1170								
2a	4,0	1185-1200								
	1300	0,3-1,4								

The numbers denote the sequence of the tests

C. Settings for Fuel Injection Pump with Fitted Governor

2b Full-load stop Test oil temp. 40°C (104°F) rev/min 1		6 Rotational-speed limit Note: changed to . . . rev/min 3		3a Fuel delivery characteristics rev/min 4		Starting fuel delivery Idle rev/min 6		4a Idle stop Control rod travel mm 9	
cm ³ /1000 strokes 2				cm ³ /1000 strokes 5		cm ³ /1000 strokes 7		rev/min 8	
1130	163,0-165,0 (160,0-168,0)	1160-1170*	-	-	-	100	140,0-160,0 (136,0-164,0)	-	-

Checking values in brackets

* 1 mm less control rod travel than col 2

3.85

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①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o

3. Edition

En

PE 8 P 120 A 320 LS 3816 RQV 350 - 1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 5 - 4 je $45^\circ \pm 0,5^\circ$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 067

supersedes 3.83

company: Daimler Benz

engine: OM 422 A

243 kW (330 PS)

Komb.-Nr. 0 401 848 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke 4,0 - 4,1 mm (from BDC)
(3,95 - 4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8 - 16,0	0,5(0,9)			
350	4,9-5,1	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1240	15,2-17,8	-	-	-	ca. 10	100	min.6,0	300	0,6-0,9
ca. 63	10,0	1190-1200					350	4,5-4,6	580	3,6-3,7
	4,0	1270-1300							870	5,2-5,3
	1400	0- 1,0				370-480 (3a)			1150	7,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational-speed limitation intermediate speed ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b		Starting fuel delivery idle switching point ⑥		Torque-control ⑤ travel	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	Control rod travel mm 9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	140,0-160,0	050	11,0+0,1
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)			850	11,4+0,1
							750	11,5+0,2

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

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Testspec 0113

D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 0

- 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel
	Gauge pressure = bar	Gauge pressure = bar	diminution difference mm (1)
PE 8 P..LS 3816 + RQV .. PA 590	0,70		11,6 - 11,7
		0	10,5 - 10,6
		0,47	11,4 - 11,5
		0,40	10,9 - 11,0

Notes:

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 MB 14,6 o 1

1. Edition

En

PE 8 P 120 A 320 LS 3816-10 RQV 350 - 1150 PA 590
1 - 8 - 7 - 2 - 6 - 3 - 5 je $45^\circ \pm 0,5$ ($\pm 0,75^\circ$)
Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 0 67

supersedes -

company: Daimler Benz

engine: OM 422 A

243 kW (330 PS)

Komb. Nr. 0 401 848 744

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $4,0 - 4,1$ mm (from BDC)
(3,95 - 4,15)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
1150	11,0+0,1	15,8 - 16,0	0,5(0,9)			
350	4,9-5,1	1,2 - 1,8	0,8(1,2)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel ①	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1240	15,2-17,8	-	-	-	ca. 10	100	min. 6,0	300	0,6-0,9
ca. 63	10,0 4,0 1400	1190-1200 1270-1300 0- 1,0				370-480 ③a	350	4,5-4,6	580 870 1150	3,6-3,7 5,2-5,3 7,6

Torque control travel a = 0,5 mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) ②		Rotational speed ②b Limitation intermediate speed rev/min ④a	Fuel delivery characteristics ⑤a high idle speed ⑤b rev/min cm ³ /1000 strokes		Starting fuel delivery idle switching point ⑥ rev/min cm ³ /1000 strokes		Torque-control ⑤ travel rev/min Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 1150	0,7 bar 158,0-160,0 (155,0-163,0)	1190-1200*	LDA 600	0,7 bar 166,0-172,0 (163,0-175,0)	100	140,0-160,0 (136,0-164,0)	1050 850 750	1,0+0,1 1,4+0,1 1,5+0,2
			LDA 500	0 bar 140,0-142,0 (137,0-145,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

2.85

Testoil-ISO 4113

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D. Adjustment Test for Manifold Pressure Compensator

MB 14,6 o 1 - 2 -

Test at n = rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 8 P..LS 3816-10 + RQV..PA 590	0,70	0 0,47 0,40	11,6 - 11,7 10,5 - 10,6 11,4 - 11,5 10,9 - 11,0

Notes:

(*) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 9,0 a

1. Edition

En

PE 6 P 120 A 320 RS 7102 RQV 200-1100 PA 712-1
Komb.-Nr. 0 402 646 800

supersedes...

company: Scania

engine: DS 9 01

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tubing 1 680 750 015

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

5,0-5,1
Port closing at prestroke (4,95-5,15) mm (from BDC)

Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ /100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	12,0+0,1	16,3-16,5	0,6(0,9)			3,3 [±] 0,1 (3,0-3,5)
225	4,8-5,0	1,5-1,9	0,3(0,6)			

Adjust the fuel delivery from each outlet according to the values in .

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1140	15,2-17,8	-	-	-	ca. 10	100	min. 6,3	225	0,9-1,0
ca. 63	11,0 4,0 1450	1140-1150 1280-1310 0-1,0					225 4,8-5,0 300-360=2,0		350 420 550 140	2,3-3,2 3,7-4,5 5,0-5,2 8,8

Torque control travel a = — mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation Intermediate speed (2b) (4a)	Fuel delivery characteristics high idle speed (5a) (5b)		Starting fuel delivery idle switching point (6)		Torque-control travel (5) Control rod travel mm	
rev/min 1	cm ³ /1000 strokes 2	rev/min 3	rev/min 4	cm ³ /1000 strokes 5	rev/min 6	cm ³ /1000 strokes 7	rev/min 8	mm 9
LDA 700	0,9 bar 163,0-165,0 (160,0-168,0)	1140-1150*	LDA 1100 LDA 500	0,9 bar 164,0-172,0 (162,0-174,0) 0 bar 141,0-145,0 (139,0-147,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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Testoil-ISO 4113

D. Adjustment Test for Manifold Pressure Compensator

SCA 9,0 a

-2-

Test at n = 500 rev/min decreasing pressure – in bar gauge pressure
increasing

Pump/governor	Setting Gauge pressure = bar	Measurement Gauge pressure = bar	Control rod travel- diminution difference mm (1)
PE 6 P..RS 7102 +RQV..PA 712-1	0,90	0 0,42 0,38	12,0-12,1 11,3-11,4 11,7-11,8 11,5-11,7

Notes

(1) when n =

rev/min and
gauge pressure =

bar (= maximum full-load control rod travel)

①

Test Specifications Fuel Injection Pumps ① and Governors

WPP 001/4 SCA 11,0 J

1. Edition

En

PE 6 P 120 A 720 RS 7104 Y RQV 200-1000 PA 725
Komb.-Nr. 0 402 646 821 Y

supersedes -
company: Saab-Scania
engine: DSC 11 02

Values only apply to test nozzle-and-holder
assembly 1 688 901 019 and fuel-injection test
tuhing 1 680 750 0 67

All test specifications are valid for Bosch Fuel Injection Pump Test Benches and Testers

A. Fuel Injection Pump Settings

Port closing at prestroke $\frac{4,5-4,6}{(4,45-4,65)}$ mm (from BDC) $RW=6,0-8,0$ mm						
Rotational speed rev/min 1	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Difference cm ³ / 100 strokes 4	Control rod travel mm 2	Fuel delivery cm ³ /100 strokes 3	Spring pre-tensioning (torque-control valve) mm 6
700	16,0+0,1	22,4-22,6	0,7(1,0)			3,3 [±] 0,1 (3,0-3,5)
225	4,4-4,6	1,4-1,8	0,3(0,6)			**
Port closing difference between control-rod travel 7,0 - 14,7 mm and max. 1,85 - 2,55° camshaft						

Adjust the fuel delivery from each outlet according to the values in

B. Governor Settings

Upper rated speed			Intermediate rated speed			Lower rated speed			Sliding sleeve travel	
Degree of deflection of control lever 1	rev/min Control rod travel mm 2	Control rod travel mm rev/min 3	Degree of deflection of control lever 4	rev/min 5	Control rod travel mm 6	Degree of deflection of control lever 7	rev/min 8	Control rod travel mm 9	rev/min 10	mm 11
max.	1040	15,2-17,8	-	-	-	ca. 10	100	min. 5,9	150	0-0,4
ca. 62	15,0 4,0 1300	1040-1050 1175-1205 0-1,0					225 310-370=2,0	4,4-4,6	430	2,9-3,4
									720	5,0-5,3
									1000	7,9

Torque control travel a = mm

C. Settings for Fuel Injection Pump with Fitted Governor

Full-load delivery Control-rod stop Test oil temp. 40°C (104°F) (2)		Rotational-speed limitation intermediate speed (2b) (4a)	Fuel delivery characteristics (5a) high idle speed (5b)		Starting fuel delivery idle switching point (6)	Torque-control travel (5) Control rod travel		
rev/min	cm³/1000 strokes	rev/min	rev/min	cm³/1000 strokes	rev/min	cm³/1000 strokes	rev/min	mm
1	2	3	4	5	6	7	8	9
LDA 700	0,9 bar 224,0-226,0 (221,0-229,0)	1040-1050*	LDA 1000	0,9 bar 220,0-228,0 (218,0-230,0)	100	240,0-290,0 =20,0-21,0 mm RW	-	-
			LDA 500	0 bar 164,0-168,0 (162,0-170,0)				

Checking values in brackets

* 1 mm less control rod travel than col. 2

3.85

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1 688 901 019

L10

D. Adjustment Test for Manifold Pressure Compensator

SCA 11,0 J

-2-

Test at n = 500 rev/min decreasing pressure - in bar gauge pressure
increasing

Pump/governor	Setting	Measurement	Control rod travel: diminution difference
	Gauge pressure = bar	Gauge pressure = bar	mm (1)
PE 6 P..RS 7104 Y +RQV..PA 725	0,90	0 0,41 0,29	16,0-16,1 11,8-11,9 14,0-14,1 12,4-12,6

Notes:

(1) when n = rev/min and gauge pressure = bar (= maximum full load control rod travel)

S U P P L E M E N T A R Y I N F O R M A T I O N

- Checking and adjustment without a RUBO diaphragm
- For combination with letter index see VDI-1-400/116
- For sealing, see VDI-1-400/117
- Test specifications approved by Scania on 17.5.1984
- Start of fuel delivery-engine: 22° before TDC at control-rod travel= 6,0-8,0 mm
- Firing sequence, engine : 1-5-3-6-2-4

** Due to smoothing of the sealing edge, the spring tension with a new delivery-valve holder must be adjusted to 2,9 - 3,1 mm